BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Antenatally detected thoracic cystic lesion – Diaphragmatic hernia or cystic malformation of the lung ?

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Abstract :

Congenital pulmonary airway malformation (CPAM) , which was formally known as congenital cystic adenomatoid malformation (CCAM) is a rare pulmonary malformation. A primi gravida was admitted for an elective caesarian section as she was found to have a fetus with a cystic lesion behind the heart, which was strongly suspected to be a left sided diaphragmatic hernia .Baby cried at birth and Apgar score was 8 and 9 at 1 minute and 5 minutes and did not require any form of respiratory support. Chest x ray was normal and ultrasound scan of the chest showed cystic lesions in the lingular lobe of the left lung, suggestive of CPAM and was confirmed as CPAM type 1 by a CT scan of the chest performed at the 1month of age. Baby is asymptomatic and awaiting an elective lobectomy at the age of 1 year.The reported incidence of CPAM is 1: 25000 to 1:35000, which was first described by Ch'in and Tang in 1949. Exact cause for this is not known. Some thought this is due to harmatomatous malformation and abnormal proliferation of pulmonary tissue at different sites and others described it as an arrest in the development of the fetal bronchial tree with air way obstruction.Currently 5 types are recognized and shows a wide spectrum of presenting features as symptomatic cases, recurrent pneumonia or respiratory distress with respiratory failure. CT scan is the most reliable method to confirm the diagnosis. Management plan after birth is aimed at surgery to prevent complications

Key words: CCAM, CPAM, cystic lung lesions ,ante natal diagnosis, Diaphragmatic hernia

Introduction

Congenital airway malformation (CPAM) , which was formally known as congenital cystic adenomatoid malformation (CCAM) is a rare pulmonary malformation (1). The reported incidence is 1: 25000 to 1:35000 live births (1). The prognosis varies ranging from perinatal death to spontaneous in utero regression with no neonatal morbidity. Here we report a case of antenatally detected left sided cystic thoracic lesion suspected to be a diaphragmatic hernia confirmed to be CPAM type 1 post natally.

Case report

A 25-year-old primi-gravida was admitted at 37 weeks of gestational age for an elective caesarian section as she was found to have a fetus with a ultrasonically detected cystic lesion behind the heart, which was strongly suspected to be a left sided diaphragmatic hernia. Except this ultrasound abnormality which was detected at 23 weeks of gestation rest of her antenatal period was uneventful.

Baby was delivered as planned after preparation the unit to accept a baby with a diaphragmatic hernia. Baby cried at birth and Apgar score was 8 and 9 at 1 minute and 5 minutes. His birth weight was 2.7kg. He did not have any respiratory distress and his cardiac apex was not displaced. Abdomen looked normal. He did not require any form of respiratory support. A chest x ray was performed but did not reveal any abnormality (Figure 1) so an urgent ultrasound scan was requested. It revealed that there are cystic lesions in the lingular lobe of the left lung which is suggestive of CPAM. As the baby was asymptomatic and feeding well, he was discharged. Planed to investigate further with a CT scan of the chest at the 1month of age. CT scan revealed multiple cystic lesions in the left lingular lobe and anterior segment of the left upper lobe which

was confirmed as congenital Airway Malformation Type (CAPM) type 1 (Figure 2).

Baby was referred to the thoracic surgeon was given plan to follow him up him carefully to perform an elective lobectomy at the age of 1 year or to do a lobectomy early if he develops any complications.

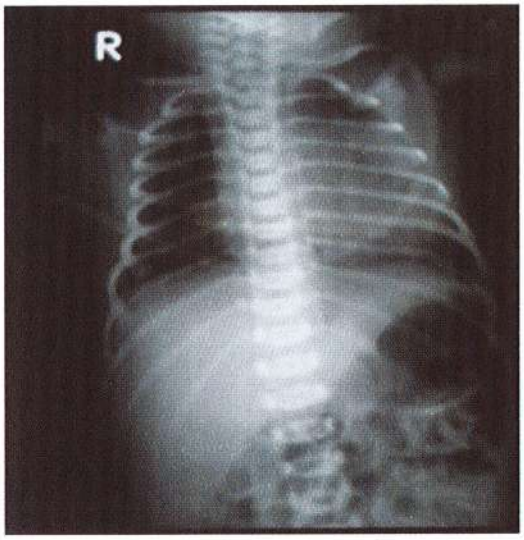

Figure 1. Chest X ray – No abnormality noted

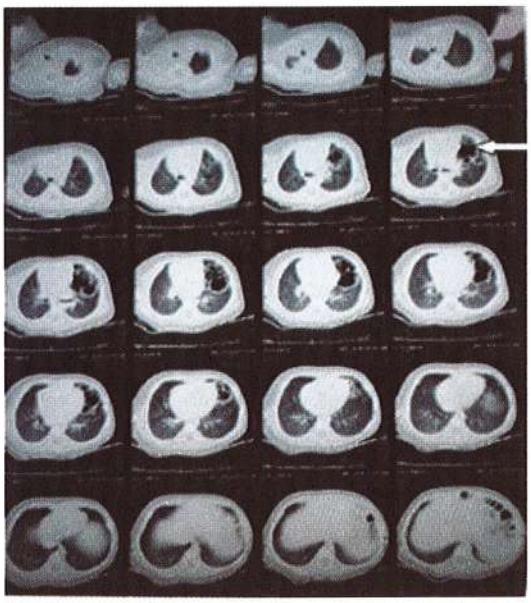

Figure 2. CT Scan- Cystic lesions in the lingular lobe

Discussion

Congenital pulmonary air way malformation (CPAM) is a rare developmental abnormality of the lungs. It is characterized by immature, malformed cystic lung tissue(1). This was first described by Ch'in and Tang in 1949 (3). Exact cause for this is not known. Some thought this is due to harmatomatous malformation and abnormal proliferation of pulmonary tissue at different sites and others described it as an arrest in the development of the fetal bronchial tree with air way obstruction(3). Initially in1977, CPAM was classified in to three types by Stoker et al based on clinical , macroscopic and microscopic criteria and in 2009 two sub types were added to the above classification(3,4).Currently 5 types are recognized (1,3) (Table 1) Table 1. Types of CPAM

Type	Frequency	Macroscopic appearance	Microscopic appearance
Type 0	1%- 3%	Small cysts 0.5cm All lobes involved	Ciliated pseudostratified epithelial lining
Type 1	60-65%	Multiple large cysts with10 cm or a single dominant cyst	Ciliated pseudostarified epitheial lining with brochiolar differenciation
Type 11	10-15%	Multiple spaced cysts 2.5 cm (sponge like appearance)	Ciliated cuboidal or columnarepithelial lining
Type 111	8%	Bulky firm mass with cysts of 1.5 cm	Ciliated cuboidal epithelial lining
Type 1V	10-15%	Peripheral cysts	Acinar – alveolar epithelial differentiation

The clinical presentation and prognosis depends on the type of the lesion with the degree of pulmonary involvement (3). Most severe type is type 0 and it is incompatible with life (1,5). Other types show a wide spectrum of presenting features as asymptomatic cases, recurrent pneumonias or respiratory distress with respiratory failure (3,6). On set of clinical presentation varies from ante natal period to birth to early neonatal period to adult life. Survivability and prognosis of fetuses suffering from CPAM depends on the size of the cyst, the degree of mediastinal displacement and presence of hydrops (4). There are reported cases of in utero regression of cysts also.

CPAM has shown a significant association with malignant neoplasms such as pleuropulmonary blastoma adenocarcinoma and rabdomyocarcoma (). Type 1 is associated with mucinous bronchoalveolar carcinoma and type 11 is associated with rabdomayosarcoma (1).

Commonly CPAM is diagnosed by detection of multiple cystic lesions at the lung field during routine antenatal scan (8). The differential diagnosis include bronchogenic cyst, mediastinal lesions like cystic teratomas, congenital lobar emphysema and diaphragmatic hernia as in our patient (9). To confirm the diagnosis, ante natal MRI scan is very informative. Although chest x ray is the most commonly used imaging method, CT scan is the most reliable method to confirm the diagnosis during post-natal period (8).

Although the exact aetiology is not well known, currently there are varies treatment plans identified and adopted including prenatal treatment plans (7). Prenatal treatment methods include cystic growth aspiration, injection of sclerosing agents and foetal surgery (10). The management plan after birth is aimed at surgery to prevent complications associated with CPAM like recurrent pneumonia, pneumothorax and malignancy and it helps to confirm the pathological diagnosis (7, 11, 12). Surgical resection in asymptomatic infants is more beneficial when compared to intervention following development of symptoms (1).According to the literature the optimal time for surgery for asymptomatic children is by the age of 1 year (8). However, if the patient is symptomatic need to intervene early.

Conflict of interest: None

Written informed consent was obtained both parents.

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Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Dapsone Hypersensitivity Syndrome with Poorly Responding Agranulocytosis to G-CSF

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Abstract :

Leprosy is a disease caused by Mycobacterium leprae and is a relatively common in Sri Lanka. Approximately 2000 cases are reported every year (1). Dapsone is a Sulfone (2) which is one of the main drugs used to treat leprosy. It is a drug which has a wide array of side effects such as pulmonary fibrosis, methemoglobinemia with resultant cyanosis, bone marrow aplasia, hemolytic anemia, peripheral neuropathy and the side effect in discussion; dapsone hypersensitivity syndrome (DHS) (3). DHS is a drug reaction to Dapsone causing skin eruptions, fever with the involvement of liver, lungs, bone marrow, blood and neurological system (2).

We report a case of a 34 year old gentleman who presented with DHS whose pancytopenia did not respond to treatment due to iron deficiency.

Introduction

Leprosy is a disease caused by Mycobacterium leprae and is a relatively common in Sri Lanka. Approximately 2000 cases are reported every year (1). Dapsone is a Sulfone (2) which is one of the main drugs used to treat leprosy. It is a drug which has a wide array of side effects such as pulmonary fibrosis, methemoglobinemia with resultant cyanosis, bone marrow aplasia, hemolytic anemia, peripheral neuropathy and the side effect in discussion; dapsone hypersensitivity syndrome (DHS) (3). DHS is a drug reaction to Dapsone causing skin eruptions, fever with the involvement of liver, lungs, bone marrow, blood and neurological system (2).

We report a case of a 34 year old gentleman who presented with DHS whose pancytopenia did not respond to treatment due to iron deficiency.

Case Report

A 34 year old gentleman who was diagnosed with Borderline Leprosy seven weeks ago and was started on Dapsone and Rifampicin, presented to us with fever with chills and rigors for 4 days duration. He had features of upper respiratory tract infection with productive cough with purulent sputum, throat pain and odynophagia. He also had right hypochondrial (RHC) pain with features of obstructive jaundice without pale stools. On examination he was very ill looking, pale and icteric. He had neutropenic ulcers on his tonsils and on the tongue. He did not have any new rashes apart from the previous leprosy lesions. He had tender hepatomegaly. His WBC was 800/µL, HB 8g/L and platelets were 93,000/µL. AST 134IU/L. ALT 220IU/L. Serum albumin 1.9g/dL. Total Bilirubin 234µmol/L with direct fraction 121µmol/L and indirect fraction 113µmol/L. His renal functions were normal. Blood was sent for blood picture. DHS was suspected and Dapsone was withheld immediately on admission. Oral Prednisolone 20mg mané was started. IV Meropenum 1g 8hrly was started as neutropenic sepsis was suspected. Granulocyte Colony Stimulating Factor (G-CSF) 3000IU three doses were administered for which he did not respond to. Despite G-CSF WBC dropped to 600/µL. Meanwhile the blood picture revealed oxidative stress induced haemolysis with low reticulocyte count and severe neutropenia. Since the WBC didn't improve with G-CSF a bone marrow aspiration was planned but the patient did not give consent to it. After 10 days of withholding Dapsone, antibiotics and steroids patient improved clinically, neutropenic ulcers started to improve, WBC started to improve and the jaundice improved. Blood picture was repeated to assess the

hemolytic status and assess the cause for WBC remaining low with G-CSF. Repeat blood picture did not reveal any hemolysis. However it showed iron deficiency anemia. The neutrophil leukocytosis was probably due to mobilization of the marginalized pool of neutrophils. Iron studies were done and it showed serum iron to be very low and TIBC to be low, most likely due to the hypoproteinemia. Therefore the probable reason for the poor response to G-CSF was due to iron deficiency. Patient was treated with IV iron and was started on oral hematinics and patient's HB was 10g/dL after two months of hematinics.

Discussion

The dapsone hypersensitivity syndrome is associated with a reported mortality of 9.9%. 0.5 to 3.6% of persons treated with the drug are at risk of developing the condition (4). So far no study has been done to identify the risk factors for developing DHS in patients who are treated with Dapsone. However F.-R. Zhang et.al performed a genomewide association study involving 872 participants who were treated with Daspone to treat Leprosy (39 participants with the dapsone hypersensitivity syndrome and 833 controls) and have found out that gene HLA-B*13:01 has been associated with the development of the dapsone hypersensitivity syndrome in patients who are treated with Dapsone (4).

DHS commonly presents as a triad fever, skin eruption, and internal organ (lung, liver, neurological and other systems) involvement (3). However the presentation of the patient in discussion was with neutropenic sepsis and neutropenic ulcers on the tonsils, lips and tongue. The patient had other features to suggest DHS such as hepatitis, haemolytic anaemia, agranulocytosis etc.

Further, a complication in this patient was that the patient did not respond to the G-CSF. Most likely cause for this was iron deficiency this patient was having. Reticulocytosis is expected when there is haemolysis, but this patient's reticulocyte count was 0.6%. The repeat blood pic suggested iron deficiency anaemia and it was seconded by the iron studies. Hence the cause for the poor response to G-CSF would have been depletion of the iron stores.

In conclusion DHS is a rare and serious reaction to Dapsone and it is something to look out for in patients being treated with Dapsone. Further DSH syndrome can present as neutropenic sepsis and neutropenic ulcers and physicians should be vigilant about it in patients being treated with Dapsone. Also when treating patients with DHS or Dapsone induced agranulocytosis, if there is poor response to G-CSF, iron deficiency is a differential diagnosis that should be considered.

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Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Dengue haemorrhagic fever with Haemolytic uraemic syndrome

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Abstract :

Dengue fever is one of the most fearful viral infections in Sri Lanka. More than one hundred thousand cases are reported each year. [1] Dengue has various atypical presentations such as polyneuropathies, fulminant hepatic failure, myocarditis and pulmonary hemorrhage. [2] Although the occurrence of renal complications is rare with dengue, acute kidney injury due to acute tubular necrosis following hypovolemic shock, rhabdomyolysis, or hemolytic uremic syndrome (HUS) are still possible. [2] Renal impairment was detected among 0.3% of cases in a series of 6154 patients with dengue hemorrhagic fever reported in 2010.[3] The glomerular thickening was observed in dengue hemorrhagic fever due to IgG, IgM, and/or C3 deposition .[2] Diagnostic criteria of HUS are microangiopathic hemolytic anemia, thrombocytopenia, and acute kidney injury.[4] Viral etiologies for HUS are rare.

Case Report

A previously healthy 21 year old law student presented with vomiting and hematemesis for one day and fever for 4 days. He came from a dengue endemic area (Colombo). He was also complaining of arthralgia, myalgia, and headache for 4 days.

The fever was intermittent and high grade and he had taken treatment from his general practitioner on the third day of symptoms. . . The patient started vomiting on day 6 of the illness and developed haematemesis, losing almost 1 litre of blood.. On physical examination at the emergency department, he appeared drowsy, pale, icteric and dyspnoeic. He had a temperature of 37oC, blood pressure of 85/60 mmHg with postural drop and a pulse rate of 143 beats per minute. There were no cardiac murmurs. The respiratory system examination was unremarkable. There was tender hepatomegaly. A diagnosis of Dengue shock syndrome was made and the patient was resuscitated according to national guidelines. One liter of blood (5ml/kg) was transfused.1 The following table (table 1) shows the summary of the investigations of the patient.

Table 1. Summary of the investigations

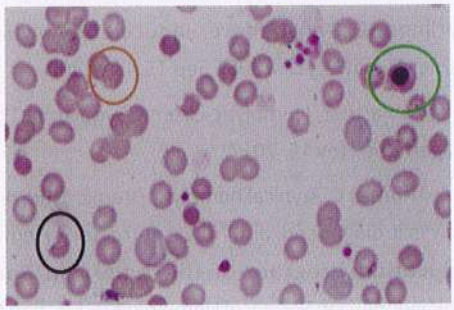
Date	5/8/2018	6/8/2018		7/8/2018	8/8/2018	9/8/2018
Day	6	7	7	8	9	10
Time	16.00	05.00	17.00	05.00	05.00	05.00
WBC	23.49	28.92	40.01	42.29	44.83	25.03
Hemoglobin	13.4g/dl	7.9g/dl	8.4g/dl	7.5g/dl	7.1g/dl	7.9g/dl
Platelet count	43000	76000	124000	120000	142000	158000
HCT	37.2	22.3	24.2	22%	20.9	23.2

APTT	56s	58s		34s	42	
PT/INR	1.23	1.23		1.04	1	
Total Protein	7.1g/dl					
Albumin	4.1g/dl	2.3g/dl				
Total billirubin	69		124	62.3	71	64.6
Indirect bilirubin	41		71	43.1	39	51.3
Direct billirubin	28		53	19.2	32	13.3
Blood urea	91mg/dl	135mg/dl	154mg/dl	174mg/dl	160mg/dl	107mg/dl
Serum creatinine	1.9mg/dl	1,7mg/dl	2.5mg/dl	2..6mg/dl	1.6mg/dl	1.3mg/dl
AST	1291IU/L	2430IU/L	3043IU/L	1923IU/L	2445IU/L	1848IU/L
ALT	614IU/L	1054IU/L	1107IU/L	1140IU/L	847IU/L	696IU/L
CRP	95mg/dl					
Amylase	27u/l					
Urine albumin						
Urine RBC	20-15					
S. Calcium	6.7mg/dl		8.6mg/dl			
S. Phosphate	3mg/dl					
LDH			9339IU/L			
Retic count		3.40%	10.20%			6%
Haemoglobin in urine			positive			

On 7 day of illness, he developed hemoglobinuria (free hemoglobin in the urine) and anemia and his platelet count, blood urea and serum creatinine were rising. Blood film showed micro angiopathic hemolytic anemia (Figure 1). Dengue fever was confirmed by positive reverse transcriptase-polymerase chain reaction (RT-PCR) assays. Negative Direct antigen test excluded a transfusion reaction. A diagnosis of Dengue hemorrhagic fever with hemolytic uremic syndrome was made.

Figure 1.

Blood film showing features of microangiopathic hemolytic anemia



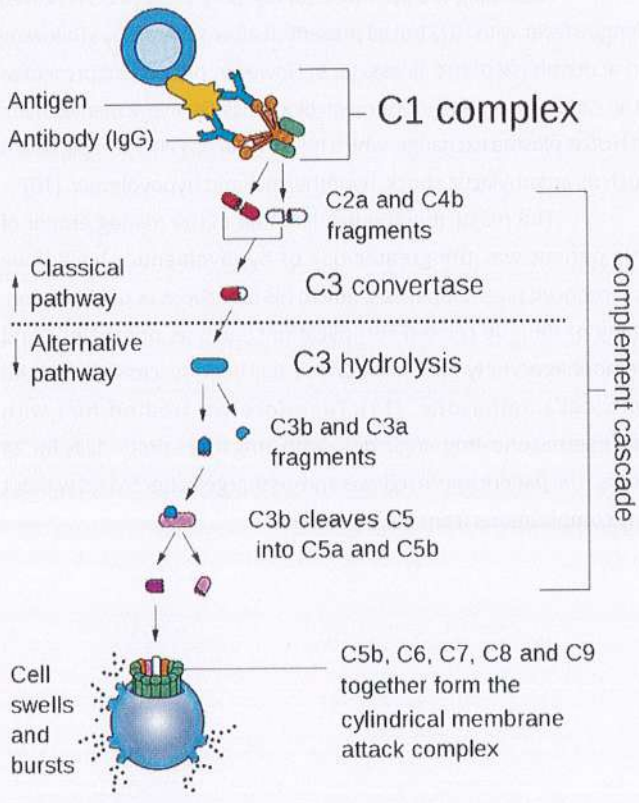
Discussion

Hemolytic uremic syndrome (HUS) is classified into typical and atypical HUS. Typical HUS is mainly due to shigella toxin. Atypical HUS has many potential triggers such as infection and genetic inheritance. Complement pathway play a major role in HUS triggered by an infection. [5] There is a risk of inducing cell dysfunction within the host itself when complement is inappropriately activated in HUS.

The complement pathway can be activated by classic or alternative pathways. Cell damage is caused by excessive activation of the alternative pathway which can be caused by gene mutations of complement proteins such as factor H, I or Co factor protein in HUS. [6]

Figure 2.

Classical and alternative pathway of Complement system (image taken from Wikipedia https://en.wikipedia.org/wiki/Alternative_complement_pathway)



Diagnostic criteria of HUS are microangiopathic hemolytic anemia, thrombocytopenia, and acute kidney injury [4]. Definitions of these criteria are displayed below (Table 2)

Table 2 . Definitions of microangiopathic hemolytic anemia, thrombocytopenia, and AKI [4]

Microangiopathic hemolytic anemia	Thrombo cytopenia	Acute kidney injury
Hb level (<10 g/dL) and 2 out of 3 of: - increased serum LDH levels - marked decreases in serum haptoglobin levels - the presence of red blood cell fragments in a peripheral blood film	Platelet count <150,000/μL	(1 out of 3) KDIGO, Kidney Disease, Improving Global Outcomes; RIFLE, Risk, Injury, Failure, Loss, End-stage kidney disease AKIN, Acute Kidney Injury Network

Another explanation for the occurrence of HUS is by ADAMTS 13(a disintegrin and metalloproteinase with a thrombospondin type 1 motif, member 13) deficiency. ADAMTS 13 deficiency is defined when the level is less than 10% of the protease activity. The sensitivity of the test ADAMTS 13 inhibitor deficiency in HUS 78% and specificity is debatable. ADAMTS13 inhibitors (IgG) were detected in dengue infection and disappeared in dengue recovery indicating the possible association of ADAMTS 13 deficiency with HUS in dengue. [7]

According to a literature survey, only a few cases reported dengue fever with HUS but all presented after several days following an acute phase of the illness. [8, 9] However, our patient presented at an earlier stage, with shock through blood loss. Definitive management of HUS is plasma exchange, which has several possible complications such as anaphylactic shock, hypothermia and hypovolemia. [10]

The major therapeutic dilemma in the manag ement of this patient was the greater risk of hypovolaemic shock if we commenced plasmapheresis, due to his blood loss at presentation. Many of dengue related complications such as ophthalmic and Hemophagocytic lymphohistiocytosis has been successfully treated with dexamethasone. [11] Therefore we treated him with dexamethasone 4mg single dose with 2mg three times daily for 24 hours. The patient improved was and discharged after 5 days without any complications from our treatment.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Acute rhabdomyolysis complicated with acute kidney injury following cannabinoid 'Kerala Ganja' ingestion

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Abstract :

Cannabinoid usage is becoming increasingly popular among srilankans. Kerala Ganja is a type of cannabinoid with psychoactive properties that causes acute toxicity as well as long term complications. Since clinical presentation varies accordingly, identification of cannabinoid toxicity is a challenge to a clinician.

Introduction

Kerala Ganja (KG) is a type of cannabinoid which is becoming an increasingly popular psychoactive substance amongst adolescent and middle age population in Srilanka.It is used as an extract,by smoking, vaporising and taking with the food. This substance is known to cause wide range of side effects. Well known side effects of synthetic cannabinnoid include chest pain,shortness of breath,vomiting,seizures as well as psychiatric manifestations such as hallucinations, panic attacks, anxiety, agitation and psychosis[1,2]. some case reports mention rhabdomyolysis ,acute kidney injury, myocardial infarction, QT prolongation, leukodystrophy and stroke[2-8].It's a challenge to identify the ingestion of cannabis and its toxicity at the emergency department because of the unavailability of serum level assessment of cannabinoids or its metabolites[9].. Some of the patients are reluctant to reveal cannabinoid ingestion. Here we reported a case of rhabdomyolysis complicated with acute kidney injury following acute ingestion of Kerala Ganja(KG).

Picture of Kerala Ganja,type of Cannabinoid

CASE REPORT:

A 29-year-old man was brought to emergency department with the complain of vomiting 15-20 times for one day duration and generalized clonic tonic type movements with loss of consciousness for 15 minutes. Convulsion was responded to IV Diazepam 5mg, that was given in Local hospital. He had no past history of seizures. On questioning he revealed that he ingested Kerala Ganja(KG) but no other recreational drugs or medications. He was a smoker as well using half pack per day for last 5 years.

On admission patient was drowsy but GCS was 15/15 with bilateral normal and reactive pupils. His Blood pressure was 115/75,pulse rate was 92 bpm,spO2 was 99%.He had abrasions on both hands possibly due to convulsions.Other system examination was normal. Laboratory investigations revealed markedly elevated creatinine phoshokinase (CPK) 46004 IU/L (NL<200), aspartate transaminase(AST) 1002 U/L(NL<27), lactate dehydrogenase(LDH) 4775 IU/L(NL<400),Uric acid 17.2 mg/dl NL(<7.2).Renal functions test were deteriorating as evidenced by rising blood urea from 70 mg/dl to 119 and 189mg/dl as well as rising serum creatinine from 4.7 mg/dl to 9.0 and 13.3 mg/dl. Serum calcium was 7.3 mg/dl (NL 8.4 -10.2),serum Phosporus was 9.1mg/dl (2.5-4.9).sodium was 136 meq,potassium was 3.6 meq.Arterial blood gas(ABG) showed compensated metabolic acidosis with normal lactate level. Electocardiogram(ECG) showed sinus rhythm, QTc 380ms.complete blood count was normal ,random blood sugar was 112mg/dl,non contast computer tomography (NCCT) of Brain was normal,ultrasound

scan of abdomen showed features to suggest acute kidney injury.

He was treated as rhabdomyolysis complicated with acute kidney injury(AKI).Intravenous hydration done with normal saline 200 ml/hr with fluid balance monitoring and sodium bicarbonate given intravenously to maintain the urine pH alkaline. Adequate urine output maintained.Nephrology opinion taken and decided to manage without renal replacement therapy(RRT).Over the next 4 days CPK level trended down from 46004 to 17296 IU/L ,LDH from 4775 to 2164 IU/L, serum creatinine from 13.3 to 3.9 mg/dl, Blood Urea from 189 to 58 mg/dl.He was discharged from hospital after 5 days and counselling done to avoid illicit drug use.When he was reviewed in clinic after 10 days his renal functions tests,CPK,LDH,AST were returned to normal level.

DISCUSSION & CONCLUSION:

We describe here a patient with acute ingestion of Kerala Ganja,a cannabinoid,which resulted in severe rhabdomyolysis with acute kidney injury.This is a rare complication of cannabinoid use and diagnosing this condition and its complications need high index of suspicion as well as laboratory invstigations .cannabinoid ingestion known to have associated with convulsions and hyperemesis syndrome[10].Very high creatinine phosphokinase (CPK) level in this patient could be contributed by convulsions and severe vomiting prior to admission. Prompt Intravenous hydration with normal saline is the main stay of treatment in attempt to maintain adequate urine output and urine alkalinization to prevent the renal damage by myoglobin that was released due to rhabdomyolysis.In this way acute kidney injury following rhabdomyolysis was managed without Renal Replacement Therapy.

We recommend high index of suspicion for KG use amongst middle age as well as young patients who present with severe vomiting and convulsions without obvious etiology. We also recommend to perform complete metabolic and electrolyte panel including creatinine phosphokinase(CPK), lactate dehydrogenase (LDH),liver enzymes, blood urea and serum creatinine to diagnose rhabdomyolysis and its complications as earlier as possible. We emphasize prompt hydration as well as alkalinization of urine to prevent or reduce the renal damage. Since there is no any antidote for cannabinoids at the moment, early identification of cannabinoid toxicity is very important to prevent its complications.

Conflicts of interest:

Authors declare no conflicts of interest.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Congenital Subglottic Stenosis; unpredicted paediatric airway management

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Abstract :

Subglottic Stenosis (SGS) is a stenosis or narrowing just below the vocal cords. It can be a congenital or acquired one. It is common in paediatric population. Presentation can mimic various upper respiratory pathologies and commonly encountered in Emergency Departments. Careful assessment and prompt airway management is crucial in managing the Subglottic Stenosis. This is a case report which describes a child with Subglottic Stenosis.

Introduction

Airway management is the crucial first step in approaching critically ill patients especially in children. Simple airway maneuvers to definitive airway are to be considered. There are several aetiology for airway obstruction. It can be anatomical, physiological or pathological. In paediatric population congenital causes also contribute airway obstruction and airway emergencies. Subglottic stenosis is one of the aetiology for the acute airway obstruction. It can be acquired or congenital. This is a case describing about subglottic stenosis and it's management.

Case History

A 5-month old baby boy born to a non-consanguineous parents with a body weight of 7 kg was admitted to the Paediatric Casualty unit of Lady Ridgeway Hospital for Children, Colombo, Sri Lanka with the complain of fever, cough, wheeze and shortness of breathing for last three days. Fever is on and off and it is responding to paracetamol syrup. Cough is moist one but associated with wheeze and shortness of breath. He was previously healthy (no history of wheezing or recurrent admission to hospital with respiratory issue). On admission general examination reveals ill looking, febrile child with adequate hydration and normal ear, nose and throat. He is hemodynamically stable but respiratory system examination shows some warning clinical signs such as respiratory rate 60, few rhonchi & crepitation bilaterally with intercostal & subcostal recession. His oxygen saturation was 84% on air. Other systemic examination was uneventful as he is alert and responsive as well.

He was put on oxygen support via face mask and nebulize with Salbutamol & Ipratropium in a back to back method and also with normal saline nebulization. His saturation improved transiently to 95% while on nebulization but his intercostal and subcostal recession were persistently present. He was administered with steroids (Hydrocortisone).

His initial blood investigations and chest X-ray was reported as normal. His venous blood gas was pH: 7.3, pCO2: 54, PO2: 53, HCO3-: 27.5. His breathing was supported with high flow nasal device with flow rate of 14 L, FiO2 of 80-100%.

Following day, symptoms were getting worse. He was managed with back to back nebulization with Salbutamol and Ipratropium, nebulized with pulmicort and adrenalin but there was no improvement. He was started with broad spectrum antibiotic and regular hydrocortisone 6 hourly.

As there is no improvement, management plan to step up to endotracheal intubation. Intubation was attempted by registrar in emergency medicine and experienced anesthetist with ketamine 10mg, suxamethonium 15mg, atropine 0.1 mg intravenous induction with Endo tracheal tube size 4.0, 3.5, 3.0 and 2.5. Even though the laryngoscope view of Cormack & Lehane classification grade 1 all 4 attempts were failed but he was able to be ventilated through Bag valve mask ventilation. Further attempt was made with gum elastic bougie. That again got fail.

He was undergone emergency tracheostomy by the on call Ear Nose Throat surgeon. While tracheostomy ENT surgeon reported that there were 90 % stenosis at the subglottic level with the help of direct laryngoscopy after establishing tracheostomy.

He was successfully ventilated through tracheostomy in the Surgical Intensive Care Unit. He was weaned off to tracheostomy mask and then he was discharged with tracheostomy with the follow up advised at Pediatric ENT clinic and mother was educated about tracheostomy care.

Case Discussion

Subglottic Stenosis (SGS) is a stenosis or narrowing just below the vocal cords (1). There are two types; acquired and congenital. Congenital form is the third common abnormality in the larynx (1). Incidence is 5% in all cases (3). Acquired form are due to intubation, infection, inflammation, burn, external trauma and high tracheostomy (1). This form is more common than the congenital one (3).

Diameter of less than 4 mm in full term and 3 mm in premature infant at the cricoid region (subglottic level) is diagnostic of congenital subglottic stenosis (1,4). There are several staging systems to classify but the Myer- Cotter system is the commonly used (5).

Child with SGS can present with stridor, respiratory distress, recurrent croup or mimic of bronchial asthma to Emergency Department (6). When child with wheezing and respiratory distress, even though the asthma is high index of suspicion we have to think the possibilities of upper airway obstruction because some causes of upper airway obstructions are difficult to differentiate during emergencies (6).

Child with respiratory distress needing intubation and ventilation, possibility of SGS should be kept in mind in the Emergency Department (7). Escalating Management plan should be the to overcome the hypoxia & respiratory failure and to maintain oxygenation and ventilation. Initial attempts of different sizes of Endo Tracheal Tube for intubation or with gum elastic bougie and ETT is acceptable. But plan to be escalated to tracheostomy as an emergency surgical airway which will help to achieve a definitive airway and clinical visualization of SGS with the help of direct laryngoscope (6). Routine evaluation with radiological (CT/MRI), endoscopic (flexible or rigid) and functional tests are available (1) but they should be withheld as it is an emergency.

Conclusion

Child with Subglottic Stenosis can present with features of bronchial asthma. Failure to manage respiratory distress lead to hypoxia and increased morbidity and mortality (8). Escalation to emergency surgical airway as Tracheostomy should be planned in patient with suspicious of SGS (6,8). Early clinical suspicious and prompt airway management will help to achieve a good outcome.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

SQUAMOUS CELL CARCINOMA ARISING FROM DERMOID CYST

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Abstract :

Benign cystic teratoma is a common benign ovarian tumour in reproductive age women. Malignant transformation in a mature cystic teratoma of the ovary is rare, occurring in only 1-2% of cases. The most common malignancy is squamous cell carcinoma, which consists of about 75% of malignant transformations. This case report describes a 38-year-old woman with a 15.79 x 11.9cm left dermoid cyst with the squamous cell carcinoma. The clinical evaluation was done with ultrasound. The laparotomy was done for TAH+BSO. Moderately differentiated squamous cell carcinoma arising from a mature cystic teratoma of the ovary was found. The aim of this case report is to create an awareness among physicians while dealing with dermoid cysts of large sizes even in middle aged women.

Keywords : Malignant transformation, Mature cystic teratoma, Squamous cell carcinoma

Introduction

Dermoid cyst or benign cystic teratoma (BCT) which is composed of well differentiated tissues derived from all three germ cell layers (ectoderm, mesoderm, and endoderm), is one of the most common tumors in women during reproductive life accounting for 10-20% of all ovarian neoplasms. This type of tumor usually grows slowly and causes minimal symptoms until it is large or there are complications. Among various complications including torsion, rupture, etc., the most dreadful is malignant transformation, arising from the ectodermal component, occurring in about 1—2% of cases1-4. Squamous cell carcinoma (SCC) is the most common type of malignancy found, comprising about 80—88.9% of all malignancies arising from dermoid tumors1, 4. Mean age incidence ranges from 45 to 60-year-old1, 2, 4-6.

The clinical presentations are similar to other ovarian tumors, including abdominal pain, abdominal distension from pelvic mass compression and it can also include bladder and bowel symptoms in some locally advanced diseases. There are no distinctive clinical features, tumour markers are often normal and preoperative diagnosis is very difficult. Diagnosis is usually made intra- and post-operatively by histopathological analysis. The prognosis of the malignant transformation of BCT depends on surgical stage; however, it is extremely poor. Oophorectomy is the operative procedure of choice and is usually curative7 but standard treatment has yet to be established.

Case Report

A 38-year-old, mother of three children, presented with left sided abdominal pain for 15 days duration. She does not have per vaginal bleeding, weight loss, loss of appetite and bowel/bladder-related symptoms.

Her clinical examinations showed that her general condition was satisfactory. The cardiovascular system and respiratory system were clinically normal. Her abdominal examination showed that there was a 26 weeks size pelvic mass which was non-tender with well-defined margins, firm and not mobile. Ultrasonography showed 15.79 x 11.9cm sized suggestive of Dermoid cyst.

A consent was obtained pre operatively for ovarian cystectomy or total abdominal hysterectomy, bilateral salpingo-oophorectomy (TAH+BSO). Exploratory laparotomy was planned for ovarian cystectomy but during surgery suspicion of malignancy arose. Therefore, TAH+BSO and infracolic omentectomy were done. No ascitic fluid was seen in the peritoneal cavity.

Histopathological examination revealed tumour composed of polygonal cells with markedly pleomorphic nuclei and eosinophilic cytoplasm. The tumour cells are arranged in nests cords and infiltrating islands. Overlying stratified squamous epithelium shows focal full thickness dysplasia. Extensive foci of necrosis are seen. The cyst focally lined by unremarkable respiratory mucosa and stratified squamous epithelium. The wall shows mature neural tissue. Appearances are those of moderately differentiated squamous cell carcinoma arising from a mature cystic teratoma of the ovary. The tumour appears to breach the ovarian capsule and infiltration into left fallopian tubal tissue is noted. Sections of the uterus show proliferative phase endometrium. The cervix is unremarkable. Right ovary and fallopian tube are unremarkable.

Final diagnosis Squamous cell carcinoma arising from a mature cystic teratoma of ovary was made.

Discussion

Malignant transformation in a dermoid cyst of the ovary is a rare complication with SCC being the most common type. Pre-operative diagnosis is difficult because of lack of specific symptoms and signs to suggest.

Radiological detection of BCT of the ovary is relatively easy due to the bony tissues, including teeth, bones and cartilages. However, physical examination and ultrasonography cannot give definitive diagnosis. Strict histopathological analysis is necessary for a definitive diagnosis in patients. SCC arising from BCT, has historically been observed in relatively older patients, particularly after menopause; though it has sometimes been reported in young patients around 30 years5. Although germ cell tumours generally occur in younger patients, SCC arising from BCT occurs in patients who are older than those who develop another malignant germ cell tumours[1].

Tumour size has been noted to predict malignancy. Tumor size less than 5cm is commonly physiological and more than that is pathological. When the tumor is ultrasonically normal and CA-125 level is within the normal range, up to 10cm tumors can be managed conservatively rather than surgically. However, the dermoid cyst has to be managed surgically irrespective of its size as the covering squamous epithelium can be transformed into malignancy in 1-2% of patients. In our case, the tumour was around 14cm, which is larger than a typical benign cyst. A study reported that a tumour diameter of larger than 9.9cm was 86% sensitive for malignancy[8].

Old age, large tumour size, and solid portion in BCT seem to predict the malignant transformation. The prognosis of SCC is much worse than that of other epithelial ovarian cancers1. Disease confined to the ovary has a much better prognosis with 5-year survival rates approaching 95%[9].

Conservative unilateral oophorectomy without further post-operative treatment may be justified for early stage disease, especially for nulliparous and young patients who desire future fertility; however, in the post-menopausal women, TAH+BSO would be the choice. Post-operative treatments in the literature included single-agent or combination chemotherapy, radiotherapy, or a combination of these modalities. Therefore, the optimal adjuvant therapy for SCC arising from a BCT has not been yet established[10].

Conclusion

Clinicians should keep this rare type of tumour in mind when faced with a dermoid cyst, especially in older patients, or in patients with larger than usual cysts.

Conflict of interest: none

Acknowledgments

This author is grateful to Dr. Sinnathurai Ahilan, Consultant pathologist, Batticaloa Teaching Hospital, Batticaloa for his contribution in the clinical care of this patient.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Extensive Nappy rash and Persistent Thrombocytopenia: A Case of Symptomatic Congenital Cytomegalovirus Infection.

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Abstract :

Diagnosis of congenital cytomegalovirus infection (CMV) is a challenge for clinicians due to its wide range of clinical presentations. This index neonate presented with extensive dermatitis in nappy area and persistent thrombocytopenia which was eventually diagnosed to have congenital CMV infection with hepatitis.

Introduction

Congenital TORCH infection in neonates innates through vertical transmission. It has wide range of clinical manifestations from asymptomatic infection to symptomatic severe disease (1). It imposes diagnostic difficulties even with advanced knowledge about its incidence, distribution and possible control of diseases (2). We described a case of congenital cytomegalovirus infection (CMV) presented with nappy rash and persistent thrombocytopenia.

Case report

A 25 day old boy was transferred from a periphery hospital for further evaluation of widespread nappy rash and persistent thrombocytopenia since his birth. He is the first baby for a non-consanguineous parent after a period of three years subfertility. His mother is a 26 year old healthy woman and had regular antenatal care under the supervision of an Obstetrician with the routine blood and imaging investigations. The reports of investigations and examination revealed no abnormality with appropriate growth of the fetus.

Baby was delivered by elective lower segment caesarian section at term due to the history of subfertility. However, meconium stained liquor was detected unexpectedly at the time of caesarean section. He cried at birth with the good Apgar score. Initial neonatal examination revealed normal, with the birth weight of 3.11kg. Baby was admitted to neonatal unit for further investigations as developed tachypnea and grunting after few hours of birth.

The baby was investigated and found to have elevated C-reactive protein (CRP) and neutrophil leukocytosis. Newborn had been managed clinically as sepsis with intravenous antibiotics and initial respiratory support. Later, blood culture was negative for bacterial growth. Even after 21 days of antibiotic therapy, he had severe thrombocytopenia with persistence of nappy rash. Then, the baby was transferred to Teaching hospital, Batticaloa for further assessment.

On examination, baby was found to have poor sucking and less activity with significant weight loss (more than 4 %), and also baby gradually developed maculopapular rash all over the body, mild icterus and hepatosplenomegaly with no ascites while in the ward.

Initial investigations showed high neutrophil leukocytosis with low platelet count and elevated liver enzymes. Ultrasound scan of brain was normal and ultra sound abdomen confirmed organomegaly. Later, CSF analysis showed normal values including TORCH infection in cerebrospinal fluid. Blood culture and urine culture showed negative for bacterial and fungal infection. Serology for CMV in baby and mother were positive. In addition, PCR for CMV in blood and urine showed high titre.

Hence, provisional diagnosis of congenital CMV infection was made and commenced oral valganciclovir. All investigations including PCR for CMV were within the normal limit after two weeks of treatment. Mother was referred to obstetrician and baby was discharged with follow up arrangements.

Discussion

Cytomegalovirus (CMV) belongs to the family of herpesviridae, which is a DNA virus (1). It remains mostly unnoticed all over the world (2). The occurrence of congenital CMV has been stated as 0.2% to 2.0% (average of 0.64%) of pregnancies (3). Studies revealed that primary infection in pregnancies carries more symptomatic disease (15%) compared to the recurrent infection (2%) (4). The incidence of primary infection in seronegative pregnant mothers disclosed 0.7% to 4.1% and it contributed to high rates of vertical transmission up to 40%. But rate was recorded as 0.15% to 3% in recurrent infection in pregnancy. Congenital CMV is caused by vertical transmission either transplacentally or during lactation. Around 90% of infected newborns are asymptomatic and rest express widespread clinical manifestations (1).

The frequent clinical features are hepatosplenomegaly (60%), microcephaly (53%), Jaundice (67%), petechiae (76%), at least one neurological abnormality (68%) and also low birth weight with failure to thrive ((5, 6). It can also present with thrombocytopenia, hepatosplenomegaly and hepatitis (7). One of the major infectious cause of sensorineural hearing loss and neurodevelopmental abnormalities in infants born in developed countries with congenital CMV (8). But the index case had a good birth weight with average head size and later developed hepatosplenomegaly and maculopapular rash with the failure to thrive. There was a case reported in Sri Lanka with poor feeding, recurrent hypoglycemia, and later developed hepatosplenomegaly (9). There are two other diseases which mimic CMV include Wiscot Aldrich syndrome and Langerhans cell histiocytosis.

Diagnosis of congenital CMV infection has been done with positive CMV- PCR from blood and urine with both serological positivity (IgM and IgG). Both urine and saliva are reliable specimens for neonatal cytomegalovirus screening using PCR. Real-time PCR of saliva disclosed high sensitivity (>97%) and specificity (99%) for identifying congenital CMV infection (10) in the first 3 weeks of life (7). Both PCR and serology are positive in our index case.

Although treatment with antivirals options are available, possible benefit must be balanced with risk like cytopenias and malignancies (7). Treatment with either ganciclovir or oral valganciclovir might improve neurodevelopmental outcome, especially hearing (8, 11). Neurodevelopmental outcome was improved with longer duration of therapy and also treatment for reasonable outcome in hearing or development should not exceed 6 months (12). We started treatment at the age of two months and it showed biochemical improvement after a few weeks of treatment.

Conclusion

Early diagnosis and treatment of congenital CMV infection is a challenge for all clinicians in order to minimize its neurological outcome especially, hearing impairment.

Acknowledgment

We would like to thank Dr. N. Tamilvanan (Consultant Dermatologist), Dr. Indika (Consultant Hematologist), Dr. V.R Francis (Consultant microbiologist), and Dr. M. Thirukumar (Consultant Obstetrician and Gynaecologist) as they all contributed to diagnose the disease.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Retro Pharyngeal Abscess Complicated With Mediastinitis Mimicking Anterior St Elevation Myocardial Infarction

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Abstract :

Retro pharyngeal abscess is a complication following foreign body impaction. The infection can spread via retropharyngeal space to mediastinum causing mediastinitis. Mediastinitis can mimic ST segment elevation myocardial infarction as the inflammation involves the heart as well. This is a case of a 48 years old diabetic patient with accidental ingestion of fiber part of a vegetable(Beans) following a choking attack which was neglected by the patient and ended up in retropharyngeal abscess with mediastinitis, leading to thrombolysis for acute anterior ST segment elevation myocardial infarction and Video Assisted Thoracoscopic exploration and decortication.

Keywords: Malignant transformation, Mature cystic teratoma, Squamous cell carcinoma

Introduction

A retropharyngeal abscess is an infection in one of the deep spaces of the neck(1).Retropharyngeal abscesses are rare in adults. They occur mostly in immunocompromised patients or as a complication of foreign body impaction. These abscesses are more frequent in children because of the abundance of retropharyngeal lymph nodes(1). In adults, retropharyngeal abscesses can occur as a result of local trauma, such as foreign body ingestion (fishbone), or instrumental procedures (laryngoscopy, endotracheal intubation, feeding tube placement, etc.), or in the particular context of an associated disease(2).

Pharyngeal foreign bodies are quite common. Their diagnosis is usually easy. The risk of complications including retropharyngeal abscess and mediastinitis is rare and it depends mainly on the nature of the foreign body and the period of the therapeutic management. The occurrence of these complications darkens the prognosis of this affection usually benign(3).

Mediastinitis secondary to spread of infection from elsewhere has become rare in the antibiotic era. The usual route of spread of oropharyngeal infections is via retropharyngeal space to mediastinum. The mainstay of treatment for mediastinitis is open drainage via a cervical or thoracic approach(2).However, the appropriate timing to undergo a surgical procedure is still controversial(1).

Descending Necrotizing Mediastinitis (DNM) can be a serious and life threatening complication of deep neck infection if the diagnosis is not quickly established. Besides inevitable application of antimicrobial drugs, good drainage of the mediastinum is necessary(4).
The inflammation associated with DNM may involve the heart, which produces acute changes in the electrocardiogram (ECG)(5).The ST segment elevation in ECG resolved immediately after pigtail catheter drainage. Finally, DNM was proved by right thoracotomy with mediastinalexploration(6).

Case history

A 48 year old post master, known patient with diabetes for 10 years, not on regular medications, presented with fever and throat pain while swallowing for two days. Five days before the onset of fever,he had a choking attack while eating a vegetarian meal. He also complained of chest pain on the day of admission, but not associated with any autonomic symptoms.

On physical examination,he was febrile and mild dyspnoeic. Swelling of face and neck noted. ECG showed 1 to 2 mm ST elevation in leads V2 to V4 and he was thrombolysed with Tenecteplase and

managed in coronary care unit for anterior ST elevation myocardial infarction.But his Troponin I was negative(<0.012ng/ml) and 2D Echocardiogram was normal(No Regional Wall Motion Abnormality and EF >60%). He also found to have very high blood sugar (CBS 464mg/dl), positive urinary ketone bodies and metabolic acidosis in ABG (PH was 7.19 with Bicarbonate 7mmol/l) and managed as diabetic ketoacidosis as well.His FBS was 24.6mmol/l and treated with soluble insulin infusion to control his blood sugar.

At the same time, patient was investigated for throat pain with swallowing difficulty. Ultra sound neck revealed retropharyngeal abscess,CECT chest and neck (Figure 1) revealed an elongated air lucency seen in the neck to the mediastinum. On the left side, further extending below the tracheal bifurcation favoring retropharyngeal abscess extending to the mediastinum causing mediastinitis. He was started on intravenous antibiotics such as Ceftazidime, Metronidazole and oral Linezolid. Patient was intubated and ventilated. Rigid oesophagoscopy done and it revealed foreign body seen at 15 to 20cm partly merge to mediastinum.Pus collection noted and drained but the foreign body was unable to remove. Repeat CECT showed foreign body in the mediastinum with retropharyngeal abscess.So he was transferred to Welisara chest hospital for further management. There he underwent right side Video Assisted Thoracoscopic exploration and decortication. Bilateral empyma of the lungs noted and patient was put on intercostal tube drainage .Foreign body also removed.

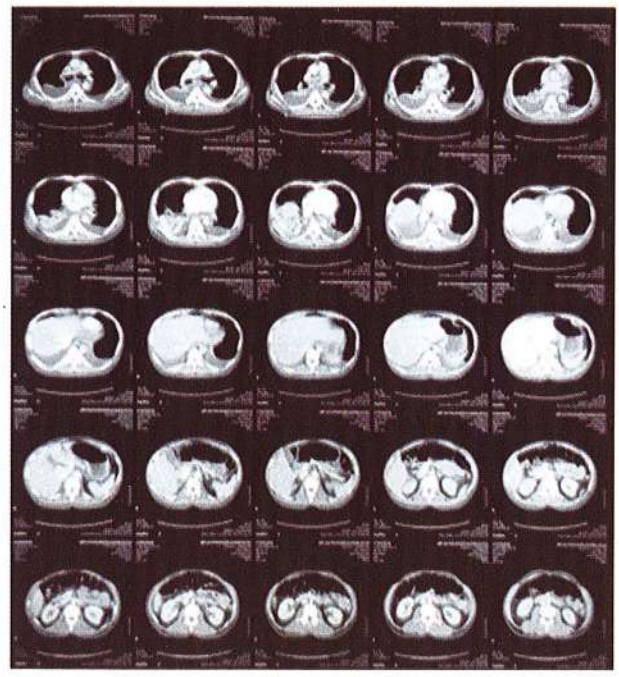

Figure 1

Discussion

In adults, the ingestion of foreign bodies are mainly observed in patients with dental prosthesis, prisoners, psychotics or patients with mental retardation and alcoholics(3). In our case, the patient had a choking attack while having a vegetarian meal and a fiber part(Beans) has been accidentally ingested.

The ingestion of a pharyngeal foreign body manifests clinically by a simple pharyngeal discomfort with a sudden onset during a meal, tenacious, localized, and often lateralized. It is most often a fish-bone or a bone fragment (3).

Mediastinitis secondary to spread of infection from elsewhere has become rare in the antibiotic era.The usual route of spread of oropharyngeal infections is via retropharyngeal space to mediastinum(2).

Acute mediastinitis is an infectious disease, life-threatening in many cases (20-40% mortality), that extends from the oropharynx, cervical or esophageal region. The extension of the cervical infection to the mediastinum is due to the continuity of cervico-mediastinal fascia.

Acute mediastinitis is an uncommon disease. The majority of mediastinitis results from oesophageal perforation or infection following median sternotomy. Rarely, odontogenic, pharyngeal, or cervical infection may extend downward into the mediastinum via pretracheal,parapharyngeal and retrovisceral spaces of the neck, described as Descending Necrotising Mediastinitis (DNM), the most lethal form of mediastinitis.

The inflammation associated with Descending Necrotizing Mediastinitis (DNM) may involve the heart, which produces acute changes in the electrocardiogram (ECG) mimicking ST elevation myocardial infarction. (5) To date, Descending Necrotizing Mediastinitis (DNM) mimicking acute ST segment elevation myocardial infarction has rarely been reported(6).

An attentive ENT examination with, indirect laryngoscopy with a tongue depressor then with a mirror allows the identification and removal in many cases. Fish bones are often planted in the tonsils and their removal is easy, by means of a clamp. General anesthesia may be necessary, especially for small children, in case of hypopharyngeal foreign body or if the patient is not cooperating, except when a large pharyngolaryngeal foreign body results in a aphagia with or without respiratory distress, thus imposing an emergency extraction. In cases where the foreign body remains neglected or ignored, the evolution is usually done towards the establishment of a retropharyngeal abscess in which the clinical diagnosis can be difficult. The clinical symptoms are variable and non specific. Infectious syndrome may be lacking in certain situations of immunosuppression.

Early diagnosis of mediastinitis and therapeutic management are essential for optimal patient survival. The cervico-thoracic CT scan is essential for the diagnosis and follow-up. This infection of the mediastinum is extremely serious and suspected from clinical and radiological arguments. It must be confirmed by surgical exploration and the positive culture of per-operative microbiological samples. The therapy is based on broad spectrum antibiotics, surgery, drainage and treatment of any organ failure. There is currently no standardized surgical therapeutic conduct. A minimally invasive surgical approach may be recommended when the diagnosis is made early and the thoracic drainage is effective. The clinical, laboratory and CT monitoring may indicate a thoracotomy. (3)

Conclusion

Pharyngeal foreign bodies are common and favorable when the diagnosis and extraction are made on time. The occurrence of complications, particularly retropharyngeal abscess and mediastinitis are rare and burdened with a high morbidity and mortality.The inflammation associated with Descending Necrotizing Mediastinitis (DNM) may involve the heart, which produces acute changes in the electrocardiogram (ECG) mimicking ST elevation myocardial infarction.

Competing interests

The author declares that no competing interests.

Funding

This research received no funding support.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Mobitz Type I Second Degree Heart Block During Recovery Phase In Dengue Fever

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Abstract :

Rhythm disturbances are rare but potentially fatal cardiac manifestations of dengue fever. The diversity of the clinical presentations throws a greatchallenge in the diagnosis of dengue myocarditis. Manifestations vary from the common uncomplicatedfebrile illness to the less common complete heart block with cardiogenic shock.

We report the case of a14-year-old school boy who developed uncomplicated Mobitz type 1 second degree heart block during the recoveryphase of a dengue illness. Although rare, Mobitz type 1 second degree heart block has been reportedin dengue fever. Therefore, this case emphasizes that ECG is a useful tool in the management ofdengue.

Keywords: Dengue fever, recovery phase, Mobitz type I second degree heart block

Introduction

Dengue is a viral infection, not only threat to Sri Lanka but also threat to the world. It belongs to family Flaviviridae and it is responsible for nearly 100 million cases of dengue fever. It affects almost all the systems in our body including, heart, brain, liver, blood and kidney(1).

Cardiac manifestations of dengue are rarely associated with severe dengue fever. There are ample of dengue with myocarditis reported all over the world(2).

The most common cardiac manifestation of dengue viral infection is myocarditis. Abnormalities of cardiac rhythm are a recognized complication of myocarditis and have been reported in association with dengue cardiac involvement. A-V blocks are, however, a rare complication of dengue myocarditis(3).

Dengue fever [DF], also known as break-bone fever is a mosquito-borne infection that causes spectrum of clinical manifestation ranges from flu-like illness self- limiting febrile episode dengue hemorrhagic fever [DHF] and dengue shock syndrome [DSS]. Four different viruses can cause dengue fever, all of which are spread by a particular type of mosquito Aedes aegypti and Aedes albopictus. Irrespective of serotype early management of dengue fever is crucial in order to prevent rare complications(4).

Case history

A 14 year old school boy presented with five days history of fever. He complained of headache and body aches, but denied chest pain, palpitation or faintishness. He has a past history of bronchial asthma for which he uses inhalers on exacerbations. There was no family history of ischaemic heart disease or sudden death at young age.

On admission, he looked ill. His pulse rate was 68 beats per minute and blood pressure was 110/80mmHg. .His heart sounds were normal. No murmurs. All other physical examinations were normal.

His investigations revealed a haemoglobin of 15.5 g/dl,haematocrit of 43.7%, White Blood Cell count of 4.02*109/l and platelets of 90*109/l.Dengue IgM antibody was positive while IgG antibody was negative. Ultra sound abdomen was done and no fluid leakage seen, His serum potassium was 4mmol/l and serum sodium was 137mmol/l.His renal and liver functions were normal. His platelet count dropped to75*109/l on day six of fever and recovered to normal by day nine.

On the morning of day nine, he developed palpitation with sweating. His 12 lead ECG (Figure 1) revealed, first degree heart block with a heart rate of 78 beats per minute .Repeat ECG in one hour (Figure 2) showed Mobitz type 1 AV block with the heart rate of 52 beats per minute.His blood pressure dropped to 100/60 mmHg.His Two Dimensional Echocardiogram showed no regional wall motion abnormality and ejection fraction more than 60%. HisTroponin I was negative (<0.012ng/l). He was transferred to Coronary Care Unit (CCU) for cardiac monitoring. While in the CCU, Mobitz type 1 AV block reverted back to first degree heart block. He was discharged with the plan of Holter monitoring in three months.

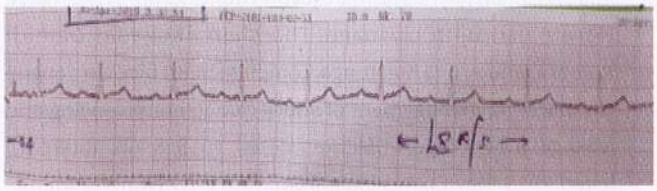

Figure 1

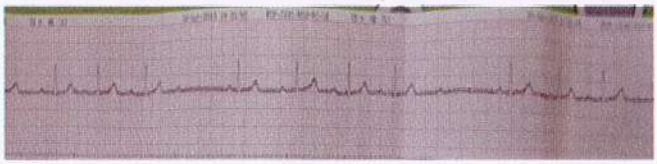

Figure 2

Discussion

The most common cardiac manifestation of dengue viral infection is myocarditis, which is likely to occur with all four serovars of dengue but may be more prevalent in DEN 3 infection(3).

It is not uncommon for cardiovascular system to be affected with mosquito-borne dengue virus. Clinical manifestations of cardiac complications have a spectrum from self-limiting tachy-brady arrhythmias to severe myocardial infarction, leading to hypotension, pulmonary edema and cardiogenic shock (5).

In a series of 250 patients from Kerala (India), 16.8% had bradycardia. The majority of these were sinus bradycardia while two patients were reported to have Mobitz type 1 and 2 A-V block respectively (6). Transient ventricular ectopy and atrial fibrillation have also been reported although neither case was associated with hemodynamic compromise(3).

Mobitz type 1 A-V block in dengue viral infection has been reported in children although the frequency of this complication in the pediatric setting is uncertain (7). The two children in question were both in the recovery phase, their arrhythmias resolved spontaneously and they did not require pacing. Mobitz type 1 A-V block in adults has been reported in the acute and deferverscent phases of dengue infection, spontaneous resolution of the A-V block occurred in each case (3).

Cardiac involvement in dengue can result in a spectrum of presentations, some benign and inadvertently detected due to the continuous monitoring that dengue patients are subjected to frequently and may not raise much concern. But others can have deleterious effects on both the patient due to its direct effect or worsen the clinical state since the basis of management in dengue virus infection is resuscitation with fluids.

Arrhythmias are the commonest abnormality found in cardiac involvement in dengue and sinus tachycardia is probably the most frequently seen phenomenon. Occurring either during the febrile phase or when developing Dengue haemorrhaghic fever with fluid leakage.

Other manifestations include T wave abnormalities, ST segment depressions and elevation, sinus pauses, ectopics that are either atrial or ventricular in origin, ventricular trigeminy, atrial fibrillation, heart blocks such as first-degree block and Mobitz type I second-degree AV block, bundle branch blocks and rarely complete atrio-ventricular dissociation.

Bradycardia is more commonly seen in defervescence and convalescence, due to parasympathetic activity. It has the potential to precede other arrhythmias like complete AV dissociation or VPC (Ventricular Premature Complex), thus its detection should prompt more intense monitoring(8).

Myocardial inflammation is known to predispose to arrhythmias and three mechanisms are thought to contribute. Firstly, the inflammatory processes involving myocytes and the interstitium can lead to alterations in membrane potential. Secondly, changes in the parameters of ventricular dynamics such as increased wall tension and myocardial oxygen consumption also increase the potential for arrhythmias. Finally, fibrosis and secondary atrophy of myocytes can favor ectopic pacemaker development. It is likely that the former two mechanisms play the predominant role in arrhythmias associated with dengue myocarditis which is an acute, reversible condition(3).

Conclusion

Physicians should have a high index of suspicion for dengue virus infection as an etiology in patients with acute cardiovascular compromise, especially in the appropriate clinical setting.Any changes in vital signs especially the heart rate, should prompt the clinicians to look forpossible underlying cause because this may be the early indication of cardiac arrhythmia which occursin dengue.

Competing interests

The author declares that no competing interests.

Funding

This research received no funding support.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Propanil poisoning with haemolytic anaemia and pigment nephropathy

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Abstract :

Propanil poisoning can present with severe life-threatening clinical manifestations with heavy ingestions. Toxicities for propanil poisoning include methemoglobinemia, hematotoxicity, immunotoxicity and nephrotoxicity. We describe a case of severe propanil poisoning with severe methaemoglobinaemia, metabolic acidosis, hemolytic anemia, acute kidney injury and acute respiratory distress syndrome after heavy ingestion, successfully treated by exchange transfusion and hemodialysis.

Intoduction

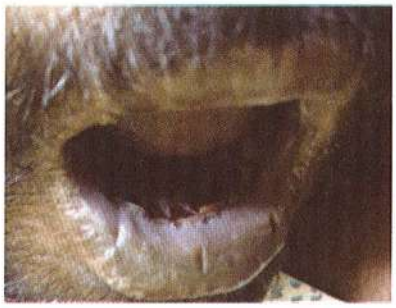
Propanil is an important cause of herbicide poisoning in Sri Lanka, widely used for rice cultivation. It is considered to be of low to medium toxicity.(1) Propanil poisoning produces methaemoglo bulinaemia, tissue hypoxia and depression of central nervous system and respiratory system. Metabolites of propanil may cause a severe hemolytic anemia with poor outcome. The recommended first line treatment is intravenous administration of methylene blue. Exchange transfusion can be life saving in severe poisoning. We describe a case of severe propanil poisoning with severe methaemoglobinaemia, metabolic acidosis, hemolytic anemia, acute kidney injury and acute respiratory distress syndrome after heavy ingestion, successfully treated by exchange transfusion and hemodialysis.

Keywords: propanil, methaemoglobinaemia, hemolytic anemia, pigment nephropathy, exchange transfusion.

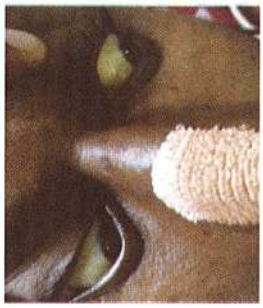
Case report

A 30 year old male admitted after 4 hours of self ingestion of Campro consist of Propanil and Clomazone of an unknown amount under influence of alcohol in a suicidal attempt after a domestic dispute. On admission the patient has dizziness, headache and vomiting. Physical examination revealed a drowsy man with Glasgow Coma Score Scale 14 and small pupil. Initial vital signs were heart rate 100 /min, BP-100/60mmHg, respiratory rate 20/min, He was managed with Gastric lavage and activated charcoal. Patient's blood exhibited abnormally dark blood. Arterial blood gas analysis as follows: PH-7.2, PO2-140, PCO2-27, lactate -14. It demonstrated severe lactic acidosis despite normal arterial oxygenation suggesting tissue hypoxia due to methemoglobinemia. He was given intravenous methylene blue 1mg/kg which was repeated subsequently due to minimal response. Patient transferred to intensive care unit and supportive care was provided with supplementary oxygen via facemask. Patient developed marked central and peripheral cyanosis on next day with pulse-oximetry of 80% with high flow oxygen. He had clear lungs, a soft abdomen and non-focal neurological examination. The patient's clinical condition continued to deteriorate with worsening drowsiness, cyanosis and respiratory distress, so it was decided to commence exchange transfusion. Serum methaemoglobin levels were not measured due to non-availability of facilities.

The patient was pale and icteric on Day 4 and urinalysis revealed 3+ blood with dark colour. Haemoglobin dropped to 9.2g/dl from 13.5g/dl, high retic count 3.6, indirect hyperbilirubinaemia (Total bilirubin 41.8mg/dl, indirect bilirubin 29.8mg/dl), increased LDH level (4771 iu/l), and the blood picture suggested ongoing haemolysis. Oxidant induced haemolytic anaemia was confirmed due to the presence of blister cells and bite cells in the blood picture. Renal function test at their worst were, blood urea 211mg/dl, serum creatine 7mg/dl with normal electrolytes level. The hepatic functions were ALT 75u/l, AST 291u/l, serum albumin 2.5 g/dl, serum globulin 3.2g/dl, prothrombin time17s and INR 1.3.



Day 02



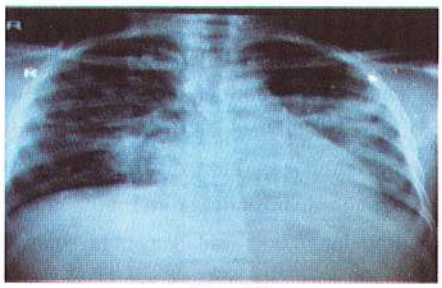
Day 04

Day 05

	1st Day	2nd Day	3rd Day	4th Day	5th Day	7th Day	8th Day	10th Day	2nd week	Discharge
WBC	14710	13920	34360	47050	59670	27490	28410	21970	16860	10230
HB	13.5	13.8	9.2	8.2	9.4	6.4	8.5	8.2	8.2	9.0
Plt	313	310	136	127	46	65	133	173	111	504
BU	25	34	61	66	116	257	181	167	135	38
S.CR	0.7	1.2	1.4	1.1	3.1	6.0	7.0	5.2	4.8	1.2

Methylene blue was given for a total of 4 days for persistent methaemoglobinaemia. Exchange transfusion was repeated on day 6 as patient consciousness was not improved and ongoing hemolysis caused acute kidney injury. Dramatic improvement in oxygen saturation was observed afterwards with rising to >95%. The level of consciousness and respiratory effort also improved.

Patient developed sudden onset shortness of breath and worsened over time with crackles in both lower zones on day 8. Repeated CXR revealed ARDS changes and 2D ECHO was normal. Patient was intubated for impending respiratory arrest and transferred again to intensive care unit for ventilator support. MRSA infection acquired from hospital and managed with Teicoplanin. Hemodialysis was done five times and renal functions improved gradually. The patient was transfused 4 packs of red blood cells and on discharge the haemoglobin was 9g/dl. We able to wean off completely after 30 days stay in MICU and discharged after 45 days of hospital stay with complete recovery.



Day 08

Discussion

Propanil is a highly effective herbicide from acetanilide group and is synonym to 3,3,4- Dichloropropionanilide. Propanil induce the conversion of Fe2+ in haemoglobin to Fe3+, forming methaemoglobin, it cannot bind O2 and lowering the blood's oxygen carrying capacity. Death usually occurs due to the severe and prolonged methaemoglobinaemia and tissue hypoxia. It is not possible to measure methemoglobin level as laboratory services are limited here. Simple bedside test for methaemoglobinemia improved antidote use and resulted in substantial reduction in mortality.(2)

Hemolysis occurs in nearly 1/3rd of the patients with propanil poisoning. There are currently no studies stating the onset of haemolysis in propanil poisoning In this patient it took place on day 03. Direct oxidative stress exerted on red blood cells with heinz body formation and depletion of intracellular glutathione stores results in intravascular hemolysis.(3) it is mediated by the culprit oxidant N-hydroxy-3,4-dichloroaniline which is synthesized in the liver then taken up by the erythrocytes to undergo

oxidation.(4) Blood picture revealed that the haemolysis was oxidant induced and glucose-6-phosphate dehydrogenase deficiency was excluded by screening method (brewer's test) as the cause of hemolytic anemia in this patient.

Nephrotoxicity and hepatotoxicity have also been reported in cases of human propanil poisoning.(5) Tissue hypoxia secondary to severe methaemoglo -binaemia and direct renal cell cytotoxicity can cause acute kidney injury in propanil poisoning patients.(6) Other than above mechanisms, intravascular hemolysis can result in hemoglobinuria and causes pigment nephropathy as like in our patient evidenced by elevated LDH, anemia and elevated bilirubin. Mechanism underlying pigment nephropathy was tubular injury by direct cytotoxicity, reducing renal perfusion, and tubular obstruction by formation of intratubular casts.(7,8) Rhabdomyolysis also can cause pigment induced nephropathy. CPK was 233U/L and rhabdomyolysis was excluded here as cause of acute kidney injury. It is the first case to report with propanil poisoning with massive hemolysis and pigment nephropathy, successfully treated with exchange transfusion and hemodialysis.

Methylene blue is the first choice for treatment of Methemoglobinemia. It is given in dose of 1-2mg/kg IV. It increases the rate of conversion of methaemoglobin to haemoglobin. Methylene blue should be used with caution as it may exacerbate heinz body formation and haemolytic anaemia in susceptible patients such as with glucose-6-phosphate dehydrogenase deficiency.(9) Repeat doses may increase haemolysis without further reducing methemoglobin. The treatment in this situation was supportive with blood transfusions to improve oxygenation of tissues. It also known

to cause rebound methemoglobinemia and we should anticipate it and monitor patient carefully.(10)

Exchange transfusion is usually performed when patients fail to improve with methyelene blue in severe poisoning. It replaces methaehemoglobin and removes the remaining poison.(11) It can improve oxygen delivery by donations of erythrocytes. Exchange transfusion were commenced in this patient nearly 24hours after ingestion of the poison and repeated on day 6, demonstrating that it can be helpful even in late stages in patient with severe poisoning. Complications of exchange transfusion are mostly those related to any blood transfusion. Our patient further complicated with catheter site infections and treated with antibiotics.

Conclusion

Propanil poisoning can present with severe life threatening clinical manifestations with heavy ingestions. Toxicities for propanil poisoning include methemoglobinemia, hematotoxicity, immunotoxicity and nephrotoxicity. Tissue hypoxia secondary to severe methaemogl -obinaemia, direct renal cell cytotoxicity, hemolysis causing pigment induced nephropathy are the underlying pathology for acute kidney injury in propanil poisoning. Most of patients recover kidney functions to near baseline. Early commencement of exchange transfusion and hemodialysis may be life saving in severe propanil poisoning with acute kidney injury.

Competing interest

The authors declare that no competing interests.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Weils disease with Guillan Barre Syndrome

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Abstract :

Leptospirosis is a common zoonosis in Srilanka. We are presenting a case of leptospirosis with conjugated hyperbilirubinemia and oliguric acute renal failure complicated with guillan barre syndrome(GBS). These complications persisted despite treatment with antibiotics and hemodialysis. Plasma exchange was instituted in view of the severe hyperbilirubinemia and guillan barre syndrome. This was followed by prompt clinical improvement, with recovery of liver and renal function. Beneficial effects of plasma exchange could be attributed to amelioration of the toxic effects of hyperbilirubinemia on hepatocyte and renal tubular cell function.

Keywords: Leptospirosis, Guillain Barre Syndrome, hyperbilirubinemia, plasma exchange

Introduction

Leptospirosis is a commonly prevailing infection in Sri Lanka. (1) Leptospirosis is a zoonosis that is caused by the spirochete leptospira interrogans. leptospirosis manifests as a biphasic illness with the septicemic phase followed by an immune phase. Clinical course of leptospirosis varies from mild to severe disease. The clinical spectrum of the disease may be an influenza-like fever to a serious presentation such as Weil's syndrome characterized by hepatic, renal, neurological, and hematological abnormalities. Classical Weil's syndrome has been estimated to occur in 10% of cases of leptospirosis. (2) Severe jaundice and oliguric renal failure are important prognostic markers which are associated with high mortality.

Case report

63 years old male patient presented with history of fever for 5 days with headache, vomiting, diarrhea, arthalgia, and progressively reducing urine output. He was in poor general condition, manifested by impaired verbal communication and signs of confusion. Physical examination showed the febrile gentle man with intensive yellow discoloration of the skin and sclera. He had calf tenderness. There was no conjunctival suffusion or lymphadenopathy. The patient's general condition deteriorated rapidly with hypotension with blood pressure of 80/60mmHg and tachycardia (pulse rate of 120 beats/minute) and tachypnoea (respiratory rate of 24 breaths/minute). His lungs were clear to auscultation bilaterally and he had regular heart sounds with no murmurs. Abdomen was soft with mild tender hepatomegaly. Patient was managed at intensive care unit for septic shock and oliguric acute renal failure.

Icterus was increased and urine changed to dark colour. After few days of admission, he developed severe pain and numbness of both lower limbs, followed by weakness of both lower limbs with numbness and pain of upper limbs. Examination at this point revealed flaccid weakness of both lower limbs with global areflexia and downgoing plantars. Pin-prick, vibratory and joint position senses were reduced in glove and stocking distribution. Neurological examination of cranial nerves was unremarkable. There were no signs of meningeal irritation. However he did not suffer from respiratory paralysis.

Laboratory Investigations showed a neutrophilic leukocytosis, thrombocytopenia and anemia (White cell count: 21.5×109/l, Neutrophils : 94%, Platelets : 28×109/l, Haemoglobin : 8.8g/dl). Blood picture shows evidence of mild degree of red cell fragmentation. Serum creatinine: 2mg/dl, Blood Urea 76mg/dl. Bilirubin levels were increasing (T.Bilirubin 220 → 883 µmol/l and D.Bilirubin 168 → 492 in consecutive determinations) Alanine aminotransferase : 40U/L, Aspartate aminotransferase : 148 U/l, Gamma glutamyl transferase

: 262 IU/L, Alkaline phosphatase : 265U/L, Serum total protein : 5.5 g/dL, Albumin: 2.5 g/dL, ESR 102mm/1st hour , C- reactive protein 409mg/dl, Creatinine kinase : 75U/L. Urinalysis revealed moderate albuminuria, microhaematuria, bilirubinuria. Serum electrolytes and coagulation profile were normal.

Sepsis workup including blood, urine, sputum, and stool cultures were negative. Hepatitis A, B and C viral markers were negative. Dengue antibodies were negative and leptospirosis was confirmed by four fold rise in antibody titre between acute and convalescent in microscopic agglutination test. USS reveals B/L kidneys were swollen(R/kidney 13.2 cm, L/Kidney 13.1cm) with pyramids were prominent, favouring acute renal parenchymal disease with mild hepatomegaly. Cerebrospinal fluid analysis showed high protein152mg/dl with cyto-protein dissociation. With the development of neurological symptoms, nerve conduction studies were performed which showed preserved conduction velocities in lower limbs while amplitudes were lost probable acute motor and sensory axonal neuropathy (AMSAN) type guillan barre syndrome.

	1st Day	2nd Day	3rd Day	5th Day	7th Day	10th Day	15th Day	18th Day	22nd Day
WBC	11.78	16.42	18.15	13.52	22.89	17.76	14.47	14.81	9.87
Hb	10.3	7.8	7.6	9.4	10.2	10.0	8.2	8.3	9.3
Plt	24	12	14	59	117	148	193	273	331
BU	76	113	153	235	325	383	181	155	46
S.Cr	2.0	2.1	2.4	2.3	6.4	8.6	5.4	5.4	1.8
CRP	409	379	338	171	74	68	47	30	8
ALT	40	58	58	53	46	38	24	25	35
AST	148	245	149	94	68	62	39	31	40
T.Bil		220	475	649	883	783	348	78	46
D.Bil		168	285	371	492	434	290	60	39
S.Alb		2.5	2.5	2.5	2.2	1.8	2.1	2.6	3.1
PT/INR		1.23	1.28	1.03	1.08		0.92		1.0

History of fever, headache, myalgias, low platelet count and acute renal dysfunction were compatible with leptospirosis. With the suggestive clinical picture, even with the absence of exposure to leptospirosis, he was started on intravenous ceftriaxone empirically and continued for 10 days and later changed to doxycycline. Nevertheless, the renal failure persisted, with a peak serum creatinine level of 8.6 mg/dl and blood urea 383mg/dl. Hemodialysis was performed, but the renal functions and conjugated hyperbilirubinemia continued to worsen with moderate impairment of liver function. He was initiated on plasma exchange and cholestasis settled with time. Improvement of the patient's clinical condition and biochemical parameters was obtained (Hb 9.3 g/dl, WBC 8.2×109/l, bilirubin 46 µmol/l, ALT 25 U/l, AST 31 U/l, blood urea 46 mg/dl, creatinine 1.8 mg/dl). The patient was discharged home on the 28th day of hospitalization in good general condition. Leptospirosis should be suspected and treated empirically in the relevant clinical settings where it can present with an atypical clinical picture as in our case with acute febrile illness followed by GBS as well as multi organ failure.

Discussion

Leptospirosis has protean manifestations and rare and unusual presentations should be kept in mind, Neurological manifestations are seen in about 10–15% of patients with leptospirosis, and often remain unrecognized. (3) Common presentations in neuroleptospirosis are asymptomatic meningitis and encephalitis. (4) Peripheral nerve involvement following leptospirosis is rare. Neuroleptospirosis can present as any of the following manifestations: myeloradiculopathy, myelopathy, Guillain-Barré syndrome, meningoencephalitis, cerebrovascular accident, cerebral venous thrombosis, cerebellar dysfunction, and cranial nerve palsy.(5) Deeply altered sensorium and seizures at presentation indicates poor prognosis.(3) R. W. Ross Russel from Malaya reports the first case of GBS associated with leptospirosis in 1956.(6)

Guillain-Barre syndrome is an acute ascending paralytic neuropathy which shortly appear after infectious disease including campylobacter jejuni, cytomegalovirus, Ebstein-bar virus, Mycoplasma Pneumonia, etc. For GBS diagnosis compatible clinical presentation, CSF analysis or EMG-NCV findings are necessary. However it can be both presented with demyelinating and axonal pattern, which axonal pattern is more prevalent in post diarrhea-GBS (7). Our patient had a pattern of acute motor and sensory axonal neuropathy. It is considered to be a rare variant of GBS, and one that usually has a more serious clinical course and slower clinical recovery than classic demyelinating form of GBS.

Organ-specific complications continued to deteriorate in our patient. His acute renal failure persisted and serum total bilirubin level continued to increase. The characteristic conjugated hyperbilirubinemia associated with leptospirosis is usually out of proportion to the degree of elevation of liver parenchymal enzymes. Failure of bilirubin excretion due to microcirulatory abnormalities and intrahepatic biliary obstruction in addition to hepatocellular damage have been proposed to be the underlying mechanisms for this unique feature of leptospirosis.(8) Bilirubin levels have not been reported to be so high in the course of leptospirosis.

Renal involvement is common in leptospirosis. Interstitial nephritis and tubular necrosis are common renal lesions that may

progress to acute renal failure.(9) Other contributing factors for acute renal insufficiency complicating leptospirosis include circulating endotoxins, azotemia related to hypotension, and rhabdomyolysis. Extreme hyperbilirubinemia has been reported to exert multiple cellular toxic effects and causing renal tubular damage. Optimal management usually requires intensive hemodialysis. Treatment of the hyperbilirubinemia is beneficial in reducing toxic insults to kidney and liver cells.

The role of plasma exchange in the treatment of leptospirosis has not been defined. Plasma exchange may indeed be a useful adjunctive therapy in patients with severe prolonged hyperbilirubinemia. It has been suggested that plasma exchange may confer beneficial effects through the removal of bilirubin.(10) .It might have contributed to the resolution of acute renal failure consequent to the reduced toxic effect of hyperbilirubinemia on hepatocytes and renal tubular cells.

Conclusion

leptospirosis should be suspected in endemic areas as a cause for atypical presentations of neurological symptoms following a febrile illness. We conclude that plasma exchange should be considered as an adjunctive therapy for patients with severe icteric leptospirosis complicated by acute renal failure who have not shown rapid clinical response to conventional treatment

Competing interest

The authors declare that no competing interests.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

POST OPERATIVE TUBERCULOUS WOUND INFECTION

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Abstract :

Surgical site infection occurs following 20% of the surgeries. The most common infective agents are mainly endogenous in origin. The wound infection due to Mycobacterium tuberculosis is a rare entity. This is case report about a patient who presented with repeated wound infection and the histopathological investigation of a specimen obtained from wound exploration, revealed the diagnosis of Mycobacterium Tuberculosis following LSCS. She was treated with anti - Tuberculous drugs for six months and had a complete recovery. This case highlights the importance of considering the possibility of TB infection in a repeated post -operative wound infection.

Keywords: Leptospirosis, Guillain Barre Syndrome, hyperbilirubinemia, plasma exchange

Introduction

The Incidence of tuberculosis was 65per 100,000 people Sri Lanka in 2014. Over the past 24 years, the value for this indicator has fluctuated between 66 in 2013 and 65 in 20141.

The prevalence of tuberculosis estimated for urban, rural and estate sectors in Sri Lanka were 13.9%, 2.2% and 2.3%, respectively. The national estimate of the prevalence of TB was 4.2% (95% CI = 1.7 7.2%). Annual risk of tuberculosis infection for the urban, rural and estate sectors were 1.4%, 0.2% and 0.2%, respectively, and the national estimate was 0.4% (95% CI = 0.2 0.7%). The estimated annual burden of newly infected or re infected TB cases with the potential of developing into the active disease (400/100 000 population) was nearly 10 fold higher than the national new case detection rate (48/100 000 population)2.

Tuberculosis is a common and serious infection. It is a major public health problem in South Asian countries. It is also a public health problem worldwide. In Sri Lanka also it is a burden. The Mycobacterium tuberculosis bacteria can cause systemic infection in virtually any organ, but pulmonary infection is the commonest form of the disease3. Surgical wound infection due to Mycobacterium tuberculosis is a rare entity3, 4, 5. Surgical site infection occurs in 20 percentages of the surgeries. The most common infective agents are Staphylococcus aureus, coagulase-negative staphylococci, Enterococcus spp. and Escherichia coli. These organisms are mainly endogenous in origin6.

The wound heals in an orderly set of stages. If wounds failed to heal within three months period are considered chronic wound7. Diabetic ulcers, neuropathic ulcer due to leprosy, burns, venous and arterial ulcers are the common causes for chronic wounds in Sri Lanka. Further, pyoderma gangrenosum and Marjolin's ulcers are also cause non healing wounds8. However, wound infections due to Mycobacterium tuberculosis is rare9. There is a patient who presented with a rare complication of repeated wound infection due to Mycobacterium Tuberculosis following LSCS9.

Case report

She in Mrs. X, a 37-year-old Bank staff, visited to sub fertility clinic 1 and ½ years following marriage. She is a healthy woman, except in 2012 she had proteinuria due to membrane proliferative glomerulonephritis and she fully recovered from it. She underwent diagnostic laparoscopy and found normal pelvis. Thereafter she underwent intrauterine insemination following ovulation induction. She conceived on the same cycle.

While in 21 week of pregnancy she developed mild per vaginal bleeding and found to have short cervix. So an emergency

cervical cerclage was done. She was given weekly Proluton-Depot (hydroxyprogesterone hexanoate) until 36 weeks of pregnancy. Otherwise her pregnancy was uncomplicated. Her glucose tolerance test, Haemoglobin levels were within normal range. Her baby was delivered by caesarean section in her 38 weeks of gestational age upon her request.

She developed weeping of the wound 2 weeks following delivery and she managed with antibiotics. However, the wound remained unhealed for 5 months despite standard antibiotics were prescribed. The wound was without any signs of acute inflammation. There was no fever, non-tenderness; only discharge was noticed. Therefore, wound exploration was done. There was a large necrotic tissue extending from groin and under rectus sheath with pus was noticed. The specimen with lymph node was sent for histopathological evaluation.

The report revealed caseating granulomatous lymphadenitis. The features are suggestive of mycobacterium tuberculosis infection. Her chest X-ray was normal. Mantoux test was positive.

She was prescribed anti TB drugs for six months and recovered completely. First two months she was prescribed following four anti TB drugs such as Isoniazid, Rifampicin, Pyraziamide and Ethambutol .Last four months she was given Isoniazid and Rifampicin to complete total six months of treatment.

Discussion

This was a post-operative case of lower segment caesarean section and she was in reproductive age, 37 years. This finding is like previous reports where most infections were found in patients with the age between 25 to 40 years.11,12She belonged to the upper socio-economic class and had no past history of tuberculosis. Chest X-rays did not show any evidence of pulmonary tuberculosis.

Many other case reports indicate that patients complained of delayed wound healing for a variable period and had serosanguinous fluid discharge from the wound. They were all diagnosed by histo-pathological evidence of tuberculous granulomata.

Histo-pathologic study was also the diagnostic method11, 12, 13, 15, 16. This case also presented and diagnosed in similar way. Tissue for tuberculous bacterial polymerase chain reaction (PCR) and culture were not performed due to limited resources at our clinical setting. She responded well with standard anti-tubercular drugs and had no residual complications. She had 18 months of regular follow up and completely symptom free.

After the initial infection of primary tuberculosis in the primary sites, there can be dissemination of tubercular bacilli to remote parts of the body12. The host's immune system becomes sensitized. In most of the immune competent persons there are no clinical manifestations, but the infection remains dormant for long time (latent TB)17. When the person's immune wanes he manifests infection18. Due to this waning of protection, secondary tuberculosis may result from either exogenous reinfection, or more commonly from reactivation of a latent primary focus with haematogenous spread to the site of the secondary infection. It can also result from local reactivation at the secondary site12. Local reactivation could be triggered by trauma, surgery, any factor or insult that alters local tissue response. It could explain the pathogenesis of wound tuberculosis.

This patient had been exposed to steroid treatment for her membrane proliferative glomerulonephritis disease during the period of 2012. As there was a long interval between the exposure and the current presentation, it cannot be considered as a contribution to her current clinical condition of wound TB.

Conclusion

This index case was diagnosed in a patient who presented with prolonged post-operative, non-healing wounds as wound tuberculosis. She was treated with standard anti-tubercular drugs and responded well. Hence, we should consider tuberculosis in post-operative non-healing wounds because of the high endemicity of the disease in the region.

Conflict of interest: none

Acknowledgments

This author is grateful to Dr. (Mrs).Partheepan Susithra, Consultant pathologist, Dr. H.R Thambawita consultant surgeon and Dr. Suntharalingam Rishikesavan, Consultant Respiratory Physician for their contribution in the clinical care of this patient.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Kikuchi Fujimoto Lymphadenitis; A rare cause of cervical lymphadenopathy with recurrence

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Abstract :

Kikuchi Fujimoto disease is a disorder with a self-limited course and a favorable outcome. We describe a young lady with two severe episodes of Kikuchi Fujimoto disease occurring seven years apart. Both episodes were at two different sites of cervical lymphnodes, and on the second occasion the patient was treated with prednisolone in order to control inflammation and achieve a reduction in cervical lymph node size. The second lymph node biopsy showed the typical features of Kikuchi Fujimoto disease. Even though the clinical interpretation of this finding was unclear, there were no clinical or laboratory evidence of the development of other serious systemic disease over some years of follow-up. However, on the basis of our experience with this patient and data from peer reviewed literature, we suggest that this generally accepted postulate should be revised and also these patients need long term follow up as there is a high risk of associating auto immune diseases such as SLE.

Keywords: Kikuchi, recurrence, lymph node biopsy, auto immune diseases.

Introduction

Kikuchi Fujimoto disease is a subacute necrotizing lymphadenopathy of unknown cause that is common among young Asian women, usually affecting cervical lymph nodes, and is characterized histologically by histiocytic proliferation and necrosis of lymph nodes [1]. Experts regard Kikuchi Fujimoto disease as a benign disorder with a typically self-limited course; however, scant data are available regarding the long-term risk of recurrence after the first qualifying episode. We describe here a lady who experienced two severe episodes of Kikuchi Fujimoto disease 7 years apart.

Case report

A 21-year-old lady from a rural village in Batticaloa admitted with pain and tenderness in the left side of her neck with moderate-grade fever, rigors, arthralgia and myalgia for 2 weeks. There was no improvement after several cycles of antibiotics, and her temperature rose progressively to 40.6°C. It was usually increasing at night and peaking in the morning, with night sweats and shaking chills. She also had cough and whitish sputum, loss of appetite, nausea, vomiting and without any loss of weight.

She denied any history of oral ulcers, alopecia, skin rashes and Reynaud's phenomenon. She didn't have any urinary or bowel symptoms.

The patient recalled that a right cervical lymph node was excised, when she was 14 years old, because of lymphadenopathy, persistent fever, and constitutional symptoms. On that occasion, a diagnosis of acute, nonspecific reactive lymphadenitis was made after exicisional biopsy and she completely recovered after 3 months. She did not remember whether treatment with antibiotics or corticosteroids was given.She was residing in a rural area with her mother, with no contact history of tuberculosis, no recent visit to abroad, no sexual promiscuity..

The patient looked ill and had an axillary temperature of 39.2°C. Physical examination disclosed only a supple neck with a chain of prominent, slightly tender lymph nodes, 0.5–3 cm in diameter, that extended from just below the leftt ear to the supraclavicular region, with a single node, 2.5 cm in diameter, in the left cervical group.

Abnormal laboratory studies were a Westergren erythrocyte sedimentation rate (ESR) 68mm, bi cytopenia, (WBC 3.5 × 109 with

48% neutrophils & 44% lymphocytes , platelet 138 / {ml}. Aspartate aminotransferase 75 U/l (normal < 40), and alanine aminotransferase 62 U/l (normal < 38). Blood film mild neutropenia and thrombocytopenia and no features favouring malignancy. Urine, throat, and blood cultures grew no organisms. Sputum AFB 3 samples and mantoux test were negative. Search for antinuclear and antiphospholipid antibodies, rheumatoid factor, antineutrophil cytoplasmic antibodies (ANCA), hepatitis B surface antigen, was negative. Chest X-ray and ultrasound scan of the chest and abdomen were unrevealing. A biopsy of a right cervical lymph node disclosed necrosis, characterized by extensive karyorrhectic debris in the absence of neutrophils. Granulomas were absent. Appearances were those of necrotizing lymphadenitis favours kikuchi lymphadenitis.

A course of oral Cefuroxime (500 mg two times daily) was given over 2 weeks with no clinical response. Intermittent spiking fever and constitutional symptoms remained and a tapering course of prednisone (40 mg per day) was given over8 weeks, which resulted in a complete recovery at the end of 2 months.

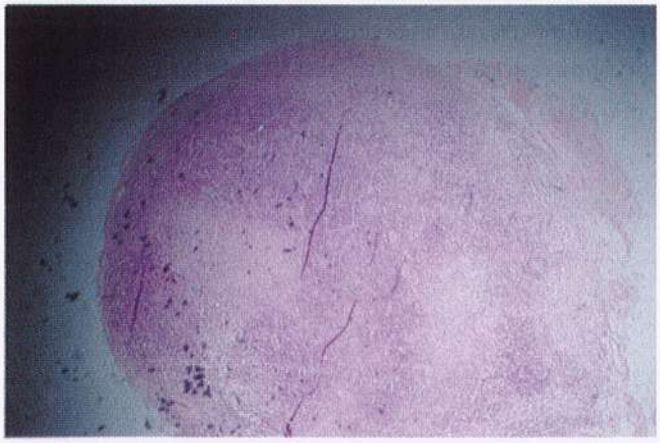

Figure 1.
Low power view of a lymphnode with preserved architecture and area of histiocytic infiltration and absent neutrophils or granuloma (H&E stain, ×4)

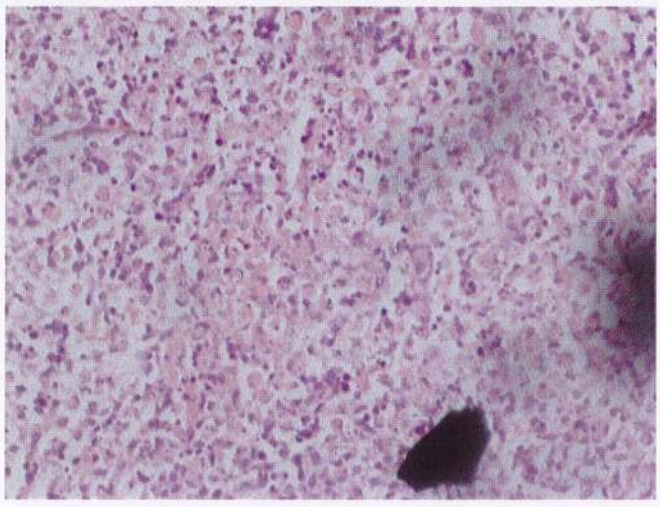

Figure 2.
High power view of necrotizing lymphadenitis shows numerous apoptotic bodies and extensive karyorrhectic debris and histiocytic infiltration (H&E stain, ×400).

Discussion

Kikuchi Fujimoto disease is generally considered a disorder with a self-limited course that resolves spontaneously over a period of several weeks to 6 months, with a favorable outcome in almost all patients[1]. However, a non-negligible proportion of those patients may experience a worsening clinical condition or even a poor outcome. Several fatalities directly attributable to the systemic involvement by the disease have been reported and the risk of progression to SLE is also well known[4]. Furthermore, many studies have shown that a wide spectrum of immune diseases ranging from arthritis and adult Still's disease [5,7] to polymyositis[8], interstitial lung disease[9], scleroderma [10], vasculitis[8], uveitis[11], thyroiditis[12] associated with Kikuchi Fujimoto disease at presentation or may complicate the ensuing course.

This case raises interest for several reasons. First, we have documented a recurrence of the disease 7 years after the qualifying episode at a different site. Recurrence of the disease seems to occur in no more than 2–3% of patients, and in almost all reported cases the relapse has been observed within a few weeks from the first episode [1]. The presence of a monoclonal or oligoclonal rather than polyclonal T-cell infiltrate in the involved lymph nodes might represent an early step in the progression towards a lymphoma or SLE, but a recent study of 56 consecutive patients did not lend support to this hypothesis [2]. Of interest, the only patient with a monoclonal T-cell infiltrate in the excised lymph node suffered more than one episode of the disease. However, spontaneous resolution of the lymphadenopathy was observed in all of them, and none progressed to lymphoma or other systemic diseases within a 6-month follow-up period.

In contrast with most studies of Kikuchi Fujimoto disease, we observed a prolonged course with severe systemic and constitutional symptoms and no response to treatment with antibiotics or nonsteroidal antiinflammatory drugs. It remains a matter of debate that steroid therapy may be needed only by those patients in whom the disease is associated with the hemophagocytic syndrome [3], SLE [4], or other rheumatic disorders [5]. Patients with distressing and severe symptoms or recurrence of the disease could benefit from corticosteroid treatment [6]. It stands that we abated inflammation and observed a reduction in cervical lymph node size only when high-dose steroid treatment was started.

Even though our knowledge about Kikuchi Fujimoto disease is mainly based on single case reports or small series of patients rather than on systematic and controlled studies, it is clear that the natural history of the disorder is unpredictable in terms of severity, complications, probability of developing other diseases, response to antibiotic or anti-inflammatory treatment, requirement for long-term therapy with steroids or immunosuppressive medications, and even the risk of death. Additionally these patients need long term follow up as there is a high risk of associating auto immune diseases such as SLE .

Conclusion

When a young female patient presents with cervical lymphadenopathy possibility of Kikuchi should be considered. Careful histopathology examination is mandatory while excluding all other differential diagnosis. Even though duration of recurrence was reported to be shorter, this case highlights that it may even take longer durations such as seven years and simple measures would not cure or remit the episode. Therefore Long term follow up is warranted not only for the surveillance of recurrence but also to look for occurrence of autoimmune disease as well.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

A study to assess the accuracy of FNAC in diagnosis Thyroid mass: Are we achieving recommended standards.

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Abstract :

The fine needle aspiration cytology is a useful tool in diagnosis of Thyroid mass. It remains the golden Standard in evaluating the thyroid mass. The assessment of accuracy of FNAC in the diagnosis of thyroid mass and arriving to a conclusion on achieving the recommended standards by comparing the recent studies will help us to upgrade the standard of the diagnosis dilemma. The FNAC in thyroid disease is a reasonably sensitive, specific and accurate diagnostic tool for the preoperative evaluation of thyroid mass. The correlation of cytological and histopathology diagnosis is an important quality assurance method. The clinicians should be encouraged to use FNAC as an initial modality in the evaluation of thyroid mass. The benign FNAC diagnosis should be renewed with carefully as false negative results do occur and these patients should be followed up and surgery must be considered if any clinical imaging suspicious of malignancy exists even in the presence of benign FNAC report.

Keywords: Fine needle aspiration cytology (FNAC), Thyroid carcinoma, Thyroidectomy, Histopathology

Introduction

The fine needle aspiration cytology is a useful tool in diagnosis of Thyroid mass(1,2). It remains the golden Standard in evaluating the thyroid mass. The assessment of accuracy of FNAC in the diagnosis of thyroid mass and arriving to a conclusion on achieving the recommended standards by comparing the recent studies will help us to upgrade the standard of the diagnosis dilemma.

The thyroid and goiters are common problem in Sri Lanka including Northern Province. The majority of which are benign. The incidence of thyroid malignancies increases worldwide, i.e. 2 – 4% increase incidence in U.S.A between 1973 and 2003 (4) and continue to rise in last decade(4). Annual incidence in UK is 2.3 per 100,000 women and 0.9 per 100,000 men (4). The incidence in Sri Lanka is 6.1 per 100,000 women and 1.3 per 100,000 men in 2007(3).

The thyroid carcinomas are classified as differentiated and undifferentiated cancers. The differentiated cancers include papillary, follicular, follicular Variant of papillary and Hurthle cell Tumors. The undifferentiated is anaplastic carcinoma. The medullary carcinoma of thyroid also included in thyroid malignancy even though it arises from parafollicular or c cells.

The most common type of thyroid cancer is papillary thyroid cancer comprising 80% of all thyroid cancers(5,6). The second common type is follicular carcinoma which accounts for 10-20% of all thyroid cancers. Incidence of M.C.T is 4% and anaplastic carcinoma is 0.9-9.8%.

The ultrasound guided FNAC remains the gold standard in evaluating the thyroid mass. The draw back in the FNAC is that it cannot distinguish a follicular adenoma from carcinoma because both have overlapping cytological features. Therefore the pathologist will report as a follicular neoplasm. The hemi-thyroidectomy (Tissue Biopsy) only confirms the follicular thyroid carcinoma by the features of capsular and vascular invasion.

The adequate aspirated material in the suspicious area of the mass is an important factor to arrive the diagnosis. The ultrasound guided FNAC can achieve this target. Anyhow the work over load and man power is the restricting factors to achieve the target in most of the centers in Sri Lanka.

FNAC results are classified according to Bethesda criteria that indicate the risk of malignancy. The accepted false negative rate for FNAC is 1 – 3%. The false positive rate for FNAC is 1%. The false

negative rates increase to 10 – 15% when the lesion is large (>4cm)(4).

British Thyroid Association of Thyroid cancer guide Lines. (FNAC) are
Thy 1/ T1 – non diagnostic
Thy 2/ T2 – Non neoplastic
Thy 3/ T3 – Follicular lesion
Thy 4/ T4 – Suspicious of Malignancy
Thy 5/ T5 – Diagnostic of Malignancy

Objective of the study

To assess the accuracy of FNAC in diagnosis of thyroid mass in patients who underwent FNAC and histopathology investigations in surgical clinic or professorial surgical wards of Teaching Hospital, Jaffna and compare with international or national similar studies.

Materials and method

The research was carried out in professorial surgical unit of Teaching hospital, Jaffna in all thyroid mass patients who underwent FNAC and histopathology investigations during 1st January, 2011 to 1st July, 2016. 280 cases included in this study.

Data extraction sheet was used to record the FNAC reports and the post thyroidectomy histopathology reports in 280 patients. Total and hemi thyroidectomy included in this study. Total and hemi thyroidectomy done in these patients for the following reasons.

1. All FNAC reports with T3-T5
2. Clinically and ultrasonically suspected malignant lesions
3. All solitary and dominant nodule irrespective of FNAC reports
4. Cosmetic reason

FNAC was repeated once or twice in the following conditions such as,

- FNAC report non diagnostic (Blood film only or No cells)
- FNAC report not co – related with clinical and ultrasonographic findings.

Thyroid swellings were aspirated using 23 gauge disposable needles using standard procedure, cytological and histopathological was done according to the standard criteria (10).

Ethical Consideration

This is a retrospective analysis. Ethical review committee, Faculty of Medicine, University of Jaffna approved this study..

Interpretation of data collection

Sensitivity, specificity, positive predictive values (PPV) negative predicative value (NPV) and diagnostic accuracy of FNAC were correlated using formulae mentioned below with the histopathology reports taken as the gold standard follicular neoplasm and suspicious lesions were considered as a positive diagnosis for statistical purpose as it's an indication for surgery.

Sensitivity = True Positive X 100 / True positive + False negative
Specificity = True Negative X 100 / True negative + False positive
Negative predictive value = True Negative X100 / False negative + True Negative
Positive predictive value = True Positive X 100 / False positive+ True Positive
Accuracy = True Positive + True negative X 100 / True Positive + false positive + True negative + False negative

Diagnosis of cytological smears was done according the standard criteria defined by British Thyroid Association of Thyroid Cancer guidelines for FNAC (10) as
Thy1/T1 – no diagnose / Inadequate)
Thy2/T2 – Non Neoplastic (benign)
Thy3/T3 - Follicular lesions
Thy4/T4 - suspicion of Maligning
Thy5/T5 - Diagnostic of Malignancy

The cytology results on above criteria classified into three groups: benign, follicular neoplasm, suspicious of malignancy and malignancy.

The cytopathological diagnosis was compared with histopathological diagnosis which were available in 280 cases during the stipulated period (1st January 2011- 1st July 2016).

Results

Reports by FNAC		Reports by histopathology			
FNAC report	No of cases	Histopathology report after surgery	No. of cases compatible with FNAC	No. of cases not compatible with FNAC	Total No. of cases not compatible with FNAC
Benign lesion Thy2/T2	161	Benign	158	-	03
		Follicular CA	-	02	
		Hurthle cell tumour	-	01	
Follicular neoplasm Thy3/T3	46	Follicular adenoma	18	-	04
		Follicular carcinoma	22	-	
		Hurthle cell carcinama	02	-	
		Thyroiditis	-	04	

Suspicious of malignancy Thy4/T4	28	Papillary CA	12	-	05
		Follicular CA	03	-	
		Anaplastic CA	03	-	
		Medullary CA	03	-	
		Hurthle cell tumour	02	-	
		Benign lesion/ Thyroiditis	-	05	
Malignant lesion Thy5/T5	45	Papillary CA	31	-	All compatible with FNAC
		Follicular CA	04	-	
		Anaplastic CA	04	-	
		Medullary CA	03	-	
		Hurthle cell CA	02	-	
		Lymphoma	01	-	
		Thyroiditis/benign lesion	-	-	

2X2 chart

	FNAC positive	FNAC negative	Total
Histopathology positive	110	03	113
Histopathology negative	09	158	167
Total	119	161	280

A Comparison of various parameters of FNAC between other studies and current study (1, 10)

Parameter	Current study	Qureishi.R	E.S Maili (10)	Sinna (10)	Bagga (10)
Sensitivity	97.3%	70%	91.6%	92.8%	66%
Specificity	96.4%	98.68%	100%	94.2%	100%
Positive predictive value	94.8%	87.5%	100%	94.9%	-
Negative predictive value	98.2%	96.15%	95.8%	91.8%	-
Accuracy	96.8%	95.34%	97%	93.6%	96.2%
Discordance	3.2%	4.66%	3%	6.4%	3.8%

Discussion

FNAC has changed the way of thyroid nodules managed and most clinician relies on FNAC tool for preoperative assessment of thyroid nodules.

The accuracy of the FNAC analysis in this study is 96.8%. The accuracy of the FNAC analysis approaches 95% in the best centers. The sensitivity is 97.3% and the specificity is 96.4% in our study. The sensitivity ranges from 80 to 90 (1, 10) and the specificity from 95 to 100 in the best centers

The diagnostic accuracy of our study encourage surgeons to continue FNAC as a gold standard rule prior to surgical management.

False negatives FNAC results may occur due to following reasons

- Sampling error
- Misinterpretation
- Depend largely on the operator skill

Any how it is difficult to calculate the true frequency of false negative results because less significant percentage of patients with benign cytological findings undergoing surgery. Most authorities are of the opinion that the true false negative rate is below 5% even if all patients with histopathologic examination (10). The false negative cases were found to be 03 in the present study.

Number of false positive cases was 06 in our study. However the large group of suspicious or follicular neoplasm falls in the category in which majority turns out to be benign lesion. This is not a good yardstick for FNAC thyroid disease. The P.P.V was 94.8% while NPV was 98.2% with a diagnostic accuracy of 96.8% which was a similar experience with other studies (1, 7, 8, 9,10).

In conclusion, FNAC results and diagnostic errors are unavoidable due to overlapping cytological features. However repetition usually helps in improving the accuracy which is also greatly depend on the experience of the cytopathologist.

Conclusion

Thus the current study which compare with previous similar studies drew similar conclusion and our patients are also achieving the similar standards of the international in the aspect of FNAC Thyroid.

The FNAC in thyroid disease is a reasonably sensitive, specific and accurate diagnostic tool for the preoperative evaluation of thyroid mass. The correlation of cytological and histopathology diagnosis is an important quality assurance method. The clinicians should be encouraged to use FNAC as an initial modality in the evaluation of thyroid mass.

The benign FNAC diagnosis should be renewed with carefully as false negative results do occur and these patients should be followed up and surgery must be considered if any clinical imaging suspicious of malignancy exists even in the presence of benign FNAC report.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CASE REPORT

Blood stained nipple discharge is it an alarm sign of breast carcinoma – A case report

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Abstract :

Nipple discharge is a common presentation to surgical clinics. Although benign lesions are more common than malignant lesions in these patients, underlying risk of malignancy should be carefully assessed by radiological and histological assessment. We present a case of 68year old lady with isolated symptom of bloodstained nipple discharge who was then found to have solid papillary carcinoma of the breast.

Keywords: Nipple discharge, Breast carcinoma, Mastectomy

Introduction

Nipple discharge is one of the presenting symptoms for 5-9% of patients seen in the Breast clinic (1). Breast cancer with nipple discharge incidence reported as 5-12% (1). Even though nipple discharge may be the presenting symptom; most of the cases of breast cancer also have an underlying breast mass or lesion in ultrasonography or mammogram.

Case presentation

63 year married women presented with Blood stained discharge from her left nipple for two months duration. She noticed blood stained discharge through multiple opening in her left nipple. She could not felt any lumps in her both breast. She had three children and she breast feed all the children. She had no family history or previous history of breast or ovarian cancer. There were no any significant findings in related to breast cancer in her history. She has no other Co-morbid disease or not on any medication.

The physical examination revealed a palpable ill-defined solid mobile mass in the central area of her left breast measuring 2cm*1cm in dimension. There was no other palpable mass in the same side or right side of the breast. There was no nipple retraction, rashes orulceration in the areolar region. The blood stained nipple discharge was noted through multiple ducts during palpation. There was no palpable axillary or cervical lymph node enlargement on both sides. The systemic Examination found to be within normal limit. The ultrasonography of this patient revealed irregular hypo-echoic lesion in the left breast at 12 o'clock position close to areolar region, and suggestive of malignant lesion .There was no axillary or cervical Lymph node enlargement noted on both side. Other breast was normal. The mammography suggested a single lesion in suggestive of malignancy with no other abnormality in same side or other side breast.

The ultrasound guided true-cut biopsy revealed solid papillary carcinoma with invasive property. There was no clinical or investigation evidence of metastatic disease. After the multi-disipilinary team discussion and with patient consent the treatment option was suggested and the Simple mastectomy and axillary clearance post-operative was uneventful recovery. The histopathology report revealed tumour size was 50mm, deep margin > 10mm away from the tumour and it was reported as Solid papillary carcinoma with invasive features. TNM -PT3N0 ,Receptor status – ER positive, PR positive, HER 2 NEU negative. The patient was referred to oncologist for further management.

Discussion

Nipple discharge is a common presentation for referral to surgical or breast clinic (2-4), but the incidence of breast cancer in patients with nipple discharge is relatively less compare to the incidence of breast benign lesion in patients with nipple discharge (97%) (1). The commonest cause of Blood stained discharge through

the nipple is Benign intra ductal papilloma (47-50%) (1,3) and duct ectasia (50-55%) (1,3). Indeed in patients presenting with blood stained discharge from the nipple may need triple assessment to exclude the malignant lesion. The clinical assessment may reveal an underlying lesion as in this patient. The nipple and areolar deformity also suggest the cancerous lesion. The radiological imaging is inaccurate in establishing the cause of nipple discharge (1,2,5). The ductal imaging by ductography is useful in detecting the ductal filling defect but nonspecific. The filling defects detected in ductographymay be due to inspissated secretion or mass lesion (1). The small intra-ductal lesion can be missed entirely in ductography (1,3). Those patients under 40 years age particularly if intending to breast feed with pathological nipple discharge were offered microdochectomy and most were recommended for Hadfield's procedure (1). The most common operations for nipple discharge are Microdochectomy or Hadfield's procedure (1). These surgical procedures are diagnostic and therapeutic. The larvage cytological analysis of nipple discharge in cases of breast carcinoma is often inadequate for the assessment (1). The techniques of ducotoscopy, larvage cytology and intra-ductal biopsy are evolving not available in many centers including in our institution (1,5). Incidence of malignancies in patients with nipple discharge is low in many studies (1).

The triple assessment plays an important role in these patients. The patients with nipple discharge over the age of 40 years who were negative for triple assessment need a close watchful waiting for the rest of their life period. The incidental DCIS/LCIS in one study series reflect the normal incidence in an asymptomatic general population and not reflect a higher incidence of disease in patents. Age has been implicated as risk factor for nipple discharge with breast carcinoma (1,5).

Conclusions

The isolated symptom of blood stained nipple discharge without any palpable mass or lesion in the breast is not a common presentation of breast carcinoma. The blood stained discharge through multiple ducts with palpable mass in the breast significantly suggest malignant lesion as in this patient. Triple assessment is an important tool in these patients. The majority of the patients with blood stained nipple discharge especially through a single duct without a mass lesions have benign lesion. These patients need a period of watchful waiting which may help to prevent unnecessary surgery.

Learning points

- Nipple discharge can be the isolated symptom of carcinoma of breast and need further evaluation.
- Triple assessment is needed is patients with bloodstained nipple discharge.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CLINICAL UPDATE

Exhausted with changing anti-hypertensives regularly! Are you sure he is truly resistant?

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Abstract :

American Heart Association released its updated scientific statement on resistant hypertension with focusing on changes to the definition, approaches to diagnosis and recommendations for treatment of the disorder. It is designed to bring recommendations for resistant hypertension in line with the 2017 American College of Cardiology/AHA clinical practice guideline for adults with hypertension and new scientific evidence published during the past decade. It has evolved since the last scientific statement in 2008. Prevalence of true resistant hypertension also warrants more attention and vigilance. Currently, the information about the prevalence of apparent treatment-resistant hypertension, includes many patients with the white-coat effect and those who are nonadherent to their antihypertensive medication regimens.

Updated definition

First, the new BP goal (above which defines resistant hypertension) is now consistent with that recommended in the 2017 ACC/AHA clinical practice guideline (< 130/80 mmHg for most individuals). The new definition of resistant hypertension emphasizes on accuracies on blood pressure (BP) measurement through minimizing errors, such as preparation of the patient, environmental conditions, cuff size and technique.

Secondly, for patients to be diagnosed with resistant hypertension, they must have BP levels above goal while on at least three antihypertensive drug classes - commonly limited to a diuretic, a long-acting calcium channel blocker and a blocker of the renin-angiotensin system, such as an ACE inhibitor or angiotensin receptor blocker - each at maximal or maximally tolerated doses.

Thirdly, to diagnose true resistant hypertension, the white-coat effect must be excluded by measuring out-of-office BP using ambulatory (or home) BP monitoring.

Fourth, diagnosis of resistant hypertension now requires the exclusion of non-adherence to the antihypertensive drug regimen. Non-adherence can be identified via several methodologies, including "frank and nonjudgmental clinician-patient discussion, monitoring of prescription refills and pill counts, BP measurement following witnessed drug ingestion and/or, if available, biochemical assays of drugs and their metabolites in urine or serum.

Exclude secondary hypertension, for example, as a result of primary aldosteronism, Cushing syndrome, renal artery stenosis, aortic coarctation, obstructive sleep apnoea or poor sleep, consumption of glycyrrhizin-rich foods or use of illicit drugs that increase blood pressure.

Confirm adherence by an objective method, for example, witnessed drug intake or measurement of drugs levels in blood or urine.

Importance of sleep

The scientific statement includes many updates, one major factor in terms of lifestyle factors that contribute to resistant hypertension is the impact of sleep disorders. Not only the obstructive sleep apnoea but also if a patient is not getting a sufficient amount of sleep, especially less than 6 hours of sleep at night, or if someone is waking up multiple times during the night, he or she is not getting enough REM sleep. These kinds of poor sleep quality can elevate BP and contribute to or actually cause resistant hypertension.

Next steps in treatment

With the statement's updated definition of resistant hypertension requiring patients to be on at least three different

classes of antihypertensive medications, the question is how should physicians proceed with treatment when BP remains uncontrolled. The committee, he noted, indicated that scientific research supports two critical next steps.

Most patients with resistant hypertension are taking a thiazide diuretic, usually hydrochlorothiazide. The updated statement suggests substituting a thiazide-like diuretic, such as chlorthalidone or indapamide. It has shown a definitive evidence of having a major positive impact on decreasing BP to below target. If BP is still not at target after addition or substitution of a thiazide-like medication, a mineralocorticoid receptor antagonist, such as spironolactone or eplerenone, should be added.

Box1; Medical Management of resistant hypertension

- Combine first- line drugs with different modes of action such as thiazides or thiazidelike diuretics, selective β1-blockers, long- acting dihydropyridine calcium- channel blockers, angiotensin- converting enzyme (ACE) inhibitors and angiotensin II type 1 receptor blockers (ARBs) according to the AB/CD rule.
- Maximize diuretic treatment.
- Add a mineralocorticoid receptor antagonist (MRA) such as spironolactone.
- Loop diuretics should be used only in patients with an estimated glomerular filtration rate of <30 ml/min/1.73 m2; MRAs should not be used in these patients because of the risk of severe hyperkalaemia.
- Second- line agents include centrally acting antihyper tensive drugs, α1-blockers, non- dihydropyridine calcium- channel blockers, the vasodilator hydralazine and the direct renin inhibitor aliskiren.
- Dual inhibition of the renin angiotensin system by combining ACE inhibitors, ARBs and/or aliskiren should be avoided.
- Aliskiren should be used with restraint in patients with diabetes or chronic kidney disease owing to the high likelihood of adverse effects.
- Use of potent vasodilators, such as minoxidil, should be attempted only as last resort

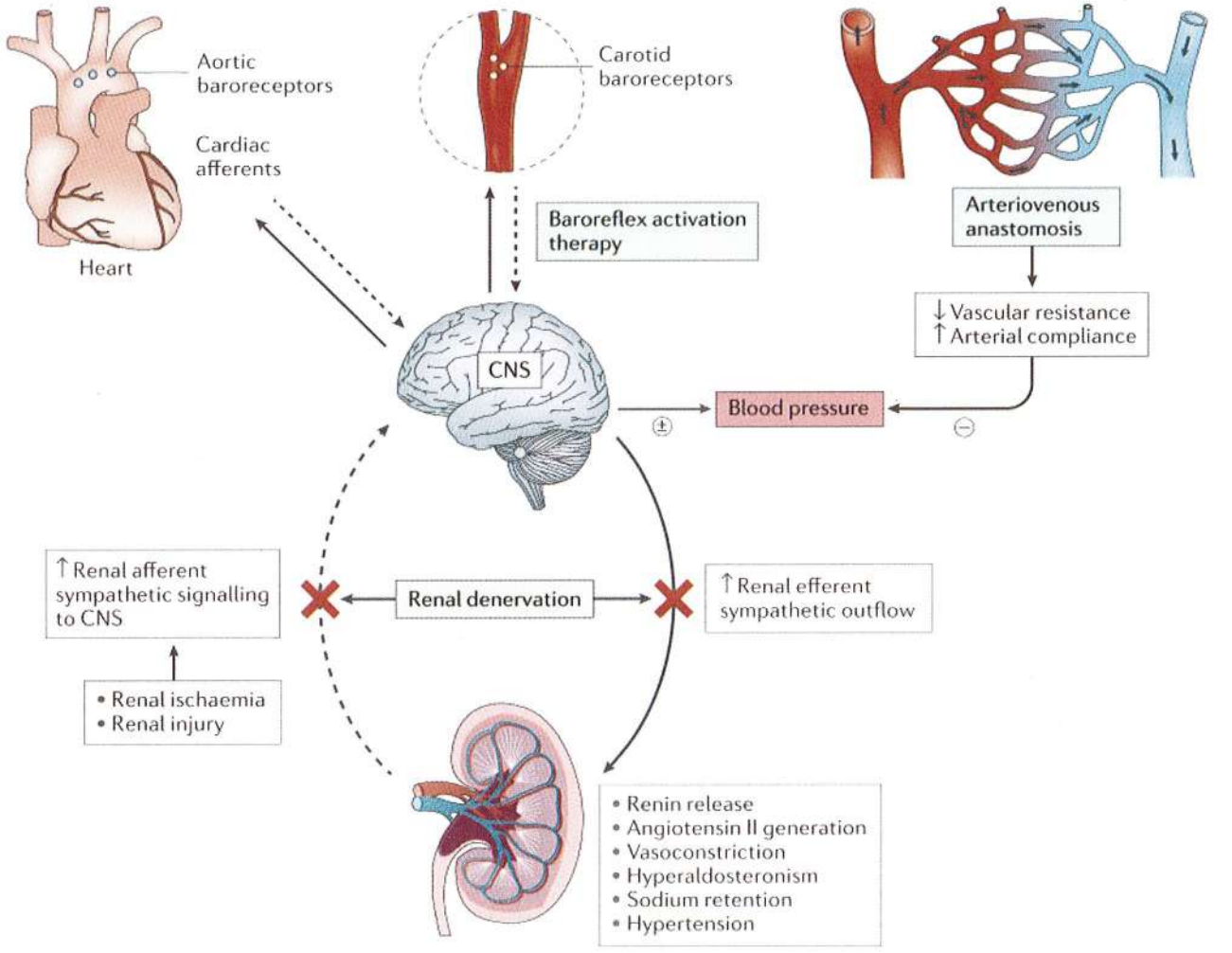

Figure 1.
Rationale for use of device therapy in resistant hypertension.

Further research

The causes of resistant hypertension, for instance, require further investigation. The patho physiology, is not always clear and the question is whether there are ways to better define the cause so as to improve treatment. In device-based therapy, we have carotid baroreceptor stimulation and renal denervation, that don't have a complete set of evidence supporting them. More information is shown in the image. Sri Lanka has not penetrated that much in device based therapy.

Efferent signalling from the brain to the kidney (solid arrow) stimulates renin release, angiotensin II generation, vasoconstriction, hyperaldosteronism and sodium retention, thereby increasing blood pressure. Afferent autonomous nervous signalling to the central nervous system (CNS) originates from the kidney , the heart and the aortic and carotid baroreceptors (dashed arrows) and can increase or decrease blood pressure. An imbalance between afferent and efferent signalling to and from the brain increases stroke volume, heart rate and peripheral vascular resistance and further contributes to the pathogenesis of hypertension. The aim of renal denervation and stimulation of the carotid baroreceptors is to rectify this imbalance in the sympathetic modulation of blood pressure. Arteriovenous anastomosis decreases arterial resistance and augments arterial compliance, potentially resulting in a reduction in blood pressure.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CLINICAL UPDATE

Thyrotoxicosis

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Abstract :

Thyrotoxicosis is the clinical manifestation of a group of disorder characterized by the presence of excess thyroid action at the tissue level and is the consequence of inappropriately high thyroid hormone concentrations.1 The term hypothyroidism is a form of thyrotoxicosis due to inappropriately high synthesis and secretion of thyroid hormones by the thyroid gland. The prevalence of hyperthyroidism is 1.3% in the United States. It occurs more commonly in women compared to men (2% vs 0.2%).2 Subclinical hyperthyroidism defined as a low or undetectable serum TSH with values within the normal reference range for both T3 and FreeT4(FT4).

Thyroid physiology

The hypothalamic-pituitary axis controls thyroid hormone synthesis production and secretion by releasing thyrotropin releasing hormone (TSH) through a negative feedback loop involving thyroxin (T4) and triiodothyronin (T3). Adequate dietary iodine intake is essential to produce thyroxine. Thyroid gland primarily produces T4 and a small amount of T3. Nearly 85% of the body's circulating T3 is produced by extra thyroidal peripheral conversion of T4, mainly in the liver and kidney.

Etiology

In iodine sufficient areas, the most common cause of endogenous hyperthyroidism is Graves' disease (GD), which accounts for 80% of cases, followed by nodular thyroid disease and thyroiditis. Toxic nodular goiter(MNG) is more common in the elderly.2 Table 1 shows the causes of thyrotoxicosis.

Thyrotoxicosis with hyperthyroidism	Thyrotoxicosis without hyperthyroidism
(a) Thyroid	(α) **Thyroid**
Graves disease(GD)	Subacute thyroiditis
Toxic multinodular goiter(MNG)	Painless thyroiditis
Solitary toxic adenoma(TA)	Postpartum thyroiditis
TSH secreting pituitary adenoma	Drug induced thyroiditis
Choriocarcinoma	Radiation thyroiditis
Iodine and iodine containing medications	Acute infectious thyroiditis
(b) Extra thyroid	(β) **Extra thyroid**
Struma ovarii	Exogenous thyroid hormone
Metastatic follicular thyroid cancer	

TABLE 1: Causes of Thyrotoxicosis

Evaluation for thyrotoxicosis

Typical laboratory finding of thyrotoxicosis include a suppressed thyroid stimulating hormone level and an elevated free thyroxine and / or triiodothyronine level. Table 2 shows the classic test result patterns in thyrotoxicosis.

Anti thyroid peroxidase (anti- TPO) antibodies, anti thyroglobulin antibodies and anti- TSH receptor antibodies are the major thyroid antibodies. Elevated levels of anti TPO and anti thyroglobulin antibodies are associated with autoimmune hypothyroidism (Hashimoto thyroiditis) and elevated levels of anti TSH receptor antibodies are associated with autoimmune hyperthyroidism (Graves disease).

The radioactive iodine intake (RAIU) test measure iodine uptake by the thyroid gland over a specific time period. RAIU by thyroid gland is elevated in hyperthyroidism and decreased is destructive thyroiditis and exogenous thyroid hormone exposure.

TEST	GD	Toxicad enoma/ MNG	SAT	Postpartum thyroiditis	Exogenous T4	TSH secreting pituitary tumor
TSH	↓	↓	↓	↓	↓	Normal/elevated
FT4	↑	↑	↑	↑	↑	↑
FT3	↑	↑	↑	↑	Normal/ ↑	Normal/ ↑
TPO-Abs	+/-	+/-	+/-	+/-		
RAIU	↑	↑	<5%	<5%	<5%	Normal/ ↑

TABLE 2: Classic test results pattern

Graves Disease (GD)

Graves' disease is an autoimmune disease that can affect the thyroid gland, ocular muscles, orbital fat and skin. Symptoms and signs of GD are mainly due to the underlying hyperthyroidism and/or immune mediated cellular infiltration. The most common manifestations are weight loss, fatigue, palpitations, tremor and goiter.[3]

Epidemiology and pathogenesis

Annual incidence is 20 to 50 cases per 100,000 persons. Lifetime risk is 3% in women and 0.3% in men.5A family history is found in half of individuals with Graves disease. It can be associated with other autoimmune diseases such as Type 1 DM, Rheumatoid arthritis.[4]

Diagnosis

Symptoms and signs are due to underlying hyperthyroidism and/or immune mediated cellular infiltration. Clinical features of Hyperthyroidism include weight loss, fatigue, palpitation, tremor, goiter (common in those younger than 60 years) and AF (10% of individuals older than 60 years).[3]

Graves orbitopathy occurs in 25% of patients with GD and features are eye lid retraction, exophthalmos, extraocular muscle dysfunction and ocular pain.6 Table 3 shows the pathognomonic sings of Graves disease. Dermopathy is almost always associated with Graves orbitopathy.

Pathognomonic signs of GD
Diffuse goiter with orbitopathy
Dermopathy (1-4%)
Acropatchy

TABLE 3

Treatment

Treatment of Graves disease consists of Symptom control and treatment of underlying hyperthyroidism.

Symptom control

As majority of symptoms are due to overstimulation of beta-adrenergic receptors, beta blockade is the mainstay of symptom control.(eg: Non selective beta blockers-Propranolol). It also has additional benefit of decreasing the peripheral conversion of T4 to T3.

Treatment of underlying hyperthyroidism

Treatment options for hyperthyroidism include anti-thyroid drugs(ATDs), radioactive iodine ablation and thyroidectomy. Table 4 summaries the treatment of Graves' disease.

Treatment	Mode of action	Dose	Remission rate	Advert effects	pregnancy
Anti-thyroid drugs • Methimazole • Carbimazole • Prophylthiouracil	Block TPO action	Proportion to degree of elevation of thyroid drugs, symptoms and goiter size	30-60%	• Rash • Elevated liver enzymes • Agranulocytosis • vasculitis	Methimazole/carbimazole • increase risk of congenital abnormalities • recommended in 2nd ,3rd trimester PTU • lower teratogenic risk but increase risk of hepatotoxicity • recommended in 1st trimester all ATDs are increase risk of fetal hypothyroidism
Radioactive iodine I^{131}	Radiation induced thyroid follicular cell necrosis	Fixed or calculate based on goiter size and uptake	80-90%	Worsening thyrotoxicosis Radiation thyroiditis Worsening orbitopathy	Contraindication in pregnancy & lactation
Thyroid surgery	Surgical removal of visible thyroid tissue	Total thyroidectomy	100%	Hypothyroidism Laryngeal nerve palsy	Can be performed in 2nd trimester

TABLE 4: Treatment of Graves Disease

Antithyroid drugs (ATDs)

Propyl Thiouracil(PTU), Methimazole and Carbimazole (prodrug to methimazole)are available.PTU has additional benefits of decreasing T4 to T3 concentration

Initial dosing of Methimazole depends on the severity of thyrotoxicosis.

- mild (free T4 level 1-1.5 times of upper limit of normal)- Methimazole 5-10mg/ day
- moderate (1.5-2 times)- Methimazole 20mg/day
- severe (>=2-3 times)- Methimazole 20-40mg in divided doses

Drugs are given for 18 months and remission rate is around 30-60%. Adverse effects occur in 13% and are very unlikely to develop after the first 3 to 6 months.

Block and replace regimen

It is employed in patients who have rapid fluctuations between hypothyroidism and hyperthyroidism while on ATD. ATD is used as a fixed dose and combine with levothyroxine to achieve euthyroidism.

Radioactive iodine ablation

Radioactive iodine I131 is incorporated in to thyroid tissue through the sodium-iodine symporter. The expression of the sodium-iodine symporter gene is dependent on TSH receptor activation. This occurs diffusely in Graves Disease and therefore RAI I131 is incorporated into the entire thyroid gland. Tissue necrosis ensues over the subsequent 6-18 weeks resulting in hypothyroidism in 80-90% patents after a single dose.[7]

Thyroidectomy

If thyroidectomy is chosen, patient should be pretreated with ATDs and Beta blockers to induce euthyroidism before surgery. Iodine solution (saturated solution of potassium iodide or Lugol solution) are taken for 10 days preoperatively to help normalize thyroid hormone level, decrease vascularity and minimize surgical blood loss. Thyroidectomy is preferable when there are symptoms, compression, large goiters, suspicious nodules, or moderate to severe and active orbitopathy in patients who cannot tolerate ATDs. Following total thyroidectomy, LT4 should be initiated at 1.6mgm/Kg per day with repeated TSH measurement at 6 to 8 weeks.

Toxic multinodular goiter

There is a multifocal hyperplasia of thyroid follicular cells with unregulated thyroid hormone production due to autonomy. It is more common in iodine deficient areas. It is also more likely in elderly, in whom it tends to manifest as apathic thyrotoxicosis.

Treatment

As ATDs are unable to induce cure for their condition given their underlying mechanism for hyperthyroidism, it can be treated with either RAI or thyroid surgery.[8]

Toxic adenoma

This is a focal hyperplasia of thyroid follicular cells with unregulated thyroid hormone production due to autonomy. Thyroid uptake and scan study show increased focal uptake in the toxic nodule (so called hot nodule) with decreased uptake in the surrounding thyroid tissue.

Treatment

It is treated with RAI treatment or surgery. RAI treatment is more likely to induce euthyroidism as opposed to Graves disease and it is also help to reduce the size of nodules. ATDs might be a reasonable choice in individuals with increased risk and/or limited life expectancy.

Amiodarone Induced Thyrotoxicosis

It contains iodine and its half-life is around 100 days. As it has direct toxic to follicular cells, resulting in a destruction thyroiditis causing thyrotoxicosis especially in iodine deficient areas. There are two types of thyrotoxicosis named as type 1 and type 2. Type 2 is the common than type1 and both types can co-exist.[10]. In type 1, there is an increase thyroid hormone synthesis due to underlying GD or MNG. Goiter is present. It is treated with antithyroid drugs. Type 2 is due to destructive thyroiditis and it is treated with high dose prednisolone (40-60mg/Kg) used for 1 to 3 months and then tapered slowly.[9]

The classical adregenic symptoms of thyrotoxicosis are often masked because of the beta blocking activity of amidarone. These patients usually exhibit apathic thyrotoxicosis. [9]

Thyrotropin Secreting Pituitary Adenoma

It is a rare condition.[11] The most common presentation of a TSH producing adenoma is a macro adenoma[12]. Main mode of treatment is surgery. Other treatment option include somatostatin analogue, continued radiotherapy and radiosurgery. ATDs are avoided given the expected tumor growth.[12,13,14]

Hydatidiform Mole/Choriocarcinoma/Testicular Germ Cell Tumor

Human chorionic gonadotropic (hCG) weakly stimulates the TSH receptor due to ligand receptor cross reactivity between the beta subunits of hCG and TSH.[15,16] Definitive treatment is directed to the underlying tumor. In addition, beta blockade and ATDs can be used for symptom control.

Metastatic Follicular Thyroid Carcinoma

Follicular thyroid carcinoma metastasize via the hematogenous spread and these metastasis contain function thyroid tissue that rarely can result in hyperthyroidism.[17] T3 thyrotoxicosis predominates because of combination of increased T3 secretion and increased conversion of exogenous T_4 to T_3. [18]

Struma Ovarii

It is a mesodermal benign or malignant teratoma located in the ovary with thyroid tissue comprising more than 50% of its mass. The diagnosis is considered in any women with biochemical hyperthyroidism, absence of goiter, absence of RAIU in the neck and increased thyroglobulin. Ultrasonography is used in the diagnosis and main mode of treatment is surgical removal of the tumor.[19]

Thyrotoxicosis without hyperthyroidism

Thyroiditis

It refers to any disorder that results from inflammation of the thyroid gland tissue with resultant thyrotoxicosis due to release of preform thyroid hormone.

Sub-acute thyroiditis (Granulomatous thyroiditis / de Quervain thyroiditis)

It is thought to be due to a viral infection or a post viral inflammatory process. It results in surge of T3 and T4 values due to their release, causing symptoms of thyrotoxicosis. New thyroid hormone synthesis ceases. Often thyrotoxicosis is followed by a period of hypothyroidism until the thyroid gland recovers and TSH increases. In most cases, thyroid hormone synthesis resumes and eventually euthyroidism is achieved after period of 2 to 3 months. There is enlarged and tender thyroid gland. Inflammatory marker (ESR &CRP) are elevated and RAIU scan shows different uptake.

As it is self-limiting condition, treatment is mainly supportive care. NSAIDs are used to relieve the pain and beta blockers are used to control the symptoms of thyrotoxicosis. prednisolone can be considered.

Painless thyroiditis (Silent thyroiditis / lymphocytic thyroiditis)

It is thought to be part of the spectrum of auto immune thyroid disorder, affecting more than men and often occurring in the presence of thyroid antibody or a family history of thyroid autoimmunity.[20]

Diagnosis is considered in any patients with bio chemical thyrotoxicosis, small non tender thyroid gland and absence of pathognomonic features of Graves disease with normal ESR and decrease radioactive iodine uptake.[21] Treatment is supportive unless hypothyroidism persist.

Postpartum thyroiditis

It occurs in 5% to 7% of women within the first few months after delivery. Pathological findings reveals lymphocytic infiltration. Like other destructive thyroiditis, it has 3 phases starting with thyrotoxicosis. There is 70% risk of postpartum thyroiditis after first episode. Permanent hypothyroidism eventually occurs in 50% of women.[22]

Drug induced thyroiditis.

Table 5 shows the drugs that are known to cause thyroidits. Treatment consists of removal of offending drug and other supportive care.[23] However removal of the offending drug must be weighed against the benefits of drugs given for the preexisting disease.

Drugs known to cause thyroiditis
Amiodarone
Lithium
Interleukin 2
Sunitinib
Sorafenib

TABLE 5

Exogenous thyrotoxicosis

It is due to the intentional (Thyrotoxicosis factitia) or accidental ingestion of excessive amount of thyroid hormone. Treatment includes symptomatic treatment with beta-blockers, cholestyramine (binds T4 and T3 in the intestine) and therapeutic plasmaparesis in selected cases.

Conclusion

Evaluation of thyrotoxicosis includes clinical assessment followed by biochemical testing , thyroid autoantibodies, nuclear medicine data and ultrasound imaging with color flow Doppler. It is important to distinguish increased thyroid hormone production from thyroiditis in term of management of thyrotoxicosis. Common causes of hyperthyroidism include Grave's disease and multi nodular goiter. Treatment of thyrotoxicosis consists of symptoms control by beta blockers and treat for underlying etiology.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

CLINICAL UPDATE

Non-Traumatic Subarachnoid Haemorrhage

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Abstract :

This update is a basic review of epidemiology, clinical presentation, diagnosis and management of subarachnoid haemorrhage and its complications. A neurological emergency with high morbidity and mortality, we present the common and potentially life threatening neurologic and medical complications of SAH to increase the awareness and promote early recognition, management and intervention which will reduce early mortality and prevent secondary brain damage and morbidity. Management of these patients adhering to published guidelines is emphasized and references to clinical trials is to elucidate the role of controversial management approaches. We have avoided great in depth into genetics and rare complications and presentations as this review is targeted to help undergraduates and junior doctors.

Intoduction

Subarachnoid haemorrhages (SAH) account for 3% of all strokes (1). They usually result due to rupture of saccular (berry) aneurysms. Mortality due to SAH has reduced in the recent past due to rapid recognition and improved management. However, morbidity due to SAH is high, with survivors being left with permanent disability, cognitive deficits and psychological effects such as depression and anxiety.

Average age of aneurysm rupture is in the 5th or 6th decade of life. Ruptured cerebral aneurysms are the commonest cause (85%) with other vascular malformations such as arteriovenous malformations, arteriovenous fistulas and reversible cerebral vasoconstriction syndrome contributing to about 5% of SAH (2). Ten percent of SAHs may not reveal a source of bleeding.

Risk factors:

Modifiable risk factors
• hypertension • smoking • heavy alcohol use • sympathomimetic drugs such as cocaine

Table 1: Modifiable Risk Factors for SAH

Non-modifiable risk factors
• increasing age • female gender • African American, Hispanic, Japanese and Finnish ethnicity • prior history or family history of subarachnoid haemorrhage • history of aneurysm in two or more first degree relatives • autosomal polycystic kidney disease • type IV Ehlers-Danlos syndrome • cerebral aneurysms more than 7 mm in diameter.

Clinical presentation:

The most common clinical symptoms on presentations include

- Sudden severe headache (described as the worst headache ever experienced)
- Loss of consciousness
- Nausea
- Vomiting
- Photophobia
- Neck pain

Some patients may experience a headache without any other associated symptoms and is known as the sentinel headache.

If the diagnosis is not suspected there is a high risk of a life threatening re-bleeding within hours to days. Other rare symptoms at presentation that should also raise the suspicion of SAH include seizures, acute encephalopathy and concomitant subdural haematoma.

Physical examination should include

- Level of consciousness (Glasgow coma scale)
- Evaluation for meningism
- Presence of focal neurological deficits
- Fundus examination may reveal intraocular haemorrhage (Terson syndrome – intraocular haemorrhage associated with SAH is associated with increased mortality and may occur in up to 40% of patients with SAH (3)).

Diagnosis:

Several diagnostic modalities are used to confirm the diagnosis of SAH.

01. Head Computed Tomography: A non-contrast CT (NCCT) head is the most rapidly available initial diagnostic test. Sensitivity of the NCCT changes with time of headache onset from 93% in the first 6 hours to approximately 100% in the first 12 hours and then begins to drop to 93% in the first day to less than 60% at 7 days (4). The characteristic appearance of hyperdense blood in the basal cisterns or sylvian, interhemispheric and interpeduncular fissure is suggestive of aneurysmal aetiology. NCCT Brain also helps evaluate for presence of complications such as hydrocephalus, intraventricular haemorrhage and intracerebral haemorrhage.
02. Lumbar puncture: Lumbar puncture is recommended as the immediate next recommended investigation in the presence of a negative or equivocal NCCT with clinical findings highly suggestive of a SAH. Opening pressure should be measured and is usually high. CSF is spun and visually inspected for xanthochromia. Spectrometry for detection of xanthochromia is superior to visual inspection however not always available. Xanthochromia develops 12 hours after onset of SAH thus it is recommended that lumbar puncture is performed after 12 hours.
03. Magnetic resonance imaging: NCCT head and MRI are equally sensitive in detecting SAH in the first 2 days, with MRI brain being slightly superior in the first 6 hours. Due to the availability and high sensitivity NCCT brain is the diagnostic investigation of choice. Hemosiderin sensitive MRI sequences (gradient recalled echo(GRE) and susceptibility-weighted imaging(SWI)) or fluid attenuated inversion recovery (FLAIR) sequences are superior in detecting subacute and chronic SAH when compared with NCCT(5). MRI is also helpful in detecting alternative pathologies such as arteriovenous malformations, inflammatory, infective and neoplastic aetiologies.
04. Identifying the bleeding source: Vessel imaging should follow a positive NCCT, MRI or lumbar puncture. The gold standard for vessel imaging is cerebral digital subtraction angiography(DSA). CT angiography (CTA) is widely available and is preferred as the first line vascular imaging modality as it is less invasive compared to DSA.
05. Perimesencephalic subarachnoid haemorrhage: Thirty eight percent of patients with negative imaging will have a nontraumatic SAH with blood isolated to the perimesencephalic cisterns.

Management:

SAH is a neurological emergency. Management of the acute phase of SAH is divided into 2 phases –

01. Prompt evaluation, recognition and diagnosis and immediate transfer to an appropriate centre for rapid treatment of the bleeding source
02. Close monitoring in a centre with neurological services and expertise to prevent secondary neurologic and medical complications.

Initial management:

01. As in any critical care situation the initial management focuses on airway breathing and circulation. Patients unable to protect their airway (coma, stupor from hydrocephalus, seizures, agitated patients who are sedated) should be intubated.
02. Re-bleeding:
    - The main focus of management during the first few hours until definitive treatment of the bleeding source.
    - Re-bleeding is a life threatening complication, with the highest mortality rate within the first 72 hours after SAH. Majority of the bleeds occur within the first 6 hours (2).
    - Re-bleeding rates are about 3% per year after the first month.
    - Risk factors for re-bleeding include poor grade SAH, hypertension, large aneurysm and the use of antiplatelets or anticoagulants.
    - Blood pressure fluctuations and blood pressure peaks should be avoided.
    - Current guidelines recommend maintaining systolic blood pressure below 160mmHg (6,7) with continuous infusion of intravenous antihypertensives (nicardipine 5mg/h to 15mg /h or labetalol 5 mg/h to 20mg/h)
    - Continuous intravenous infusion is preferred over bolus administration.
    - Hydralazine is best avoided due to rebound hypertension.
    - Pain management with short acting opiates.
    - Meningeal irritation is managed with dexamethasone.
03. Antifibrinolytics: Short term use of antifibrinolytics eg. Tranexamic acid, up to a maximum of 72 hours until aneurysm is secured is recommended. (7,8,9). Prolonged infusion results in dep vein thrombosis, venous thromboembolism, stroke and myocardial infarctions and is best avoided.
04. Disease severity scoring: The most common scales used are the World Federation of Neurological Surgeons Scale (WFNSS)

and the Hunt and Hess Scale. They are strong predictors of outcome (10,11). The modified Fishers Scale is the most reliable and validated radiological scale which is linearly associated with worse cerebral vasospasm and delayed cerebral ischaemia.

05. Admission to high volume centre: A high volume centre is defined as centres which handle more than 35 SAH cases per year with experienced cerebrovascular surgeons, endovascular specialist and neurocritical care services. (12)

06. Aneurysm treatment: Currently used definitive treatment modalities are clipping and coiling. The ISAT (International Subarachnoid Aneurysm Trial) which compared endovascular coiling versus surgical clipping showed a trend preferring endovascular coiling (13). The endovascular coiling group had a significantly higher survival, less disability and a lower risk of epilepsy compared to surgical clipping. With better outcomes in most parameters being better even at 10 years endovascular coiling is preferred over clipping. However the final choice of treatment is affected by patient characteristics as well as aneurysm characteristics.

Endovascular coiling is preferred in

- Older age
- Poor clinical grade
- Multiple comorbidities
- Top of basilar aneurysm
- High surgical risk
- Aneurysm suitable for coiling or clipping

Surgical clipping is preferred in

- Aneurysms with wide neck to body ratio
- Crucial arteries arising from the aneurysm dome
- Middle cerebral artery aneurysm
- Aneurysm with large parenchymal haematoma

07. Critical Care Management

- SAH is a systemic disease and is associated with systemic inflammatory response in syndrome (SIRS) in 75% of cases.
- SAH is also associated with several neurological complications such as hydrocephalus, brain oedema, delayed cerebral ischaemia, re-bleeding, seizures and neuroendocrine disorders and cardiac and pulmonary complications.

Neurological Complication	Management
Re-bleeding: • Life threatening complication\	• Early and rapid treatment of unsecured, ruptured aneurysm • Aggressive blood pressure control
Hydrocephalus: • Acute symptomatic hydrocephalus occurs in 20% of cases • Occurs within minutes to days after SAH onset • Presents as decreased level of consciousness, impaired up gaze, hypertension, delirium • Resolves spontaneously in 30% but can also rapidly deteriorate	• NCCT brain to confirm diagnosis • Insertion of external ventricular drain (EDV). • Lumbar drain can be used for communicating hydrocephalus • Risk of EDV include infection and bleeding in addition to changes in transmural pressures precipitating bleeding in an unsecured aneurysm. • Rapid weaning of EDV is recommended after securing the aneurysm or within 48 hours in neurologically stable patients. • If weaning is unsuccessful a chronic ventriculoperitoneal shunt is recommended.
Seizure and seizure prophylaxis: • Seizures occurring prior to securing aneurysm is a sign of early re-bleeding • Long term epilepsy occurs in 2% of patients • Non-convulsive seizures and non-convulsive status is common (3-18%). • Non-convulsive status is associated with delayed cerebral ischaemia and worse prognosis	• Treatment with antiepileptics is limited to the period before and around aneurysm clipping or coiling. • Antiepileptics have a negative effects on recovery • Phenytoin has a negative effect on neurocognitive recovery after SAH and is best avoided. • Stop antiepileptics in patients where clinical examination can be done reliably as soon as aneurysm is secured • Prophylaxis recommended only for 3 to 7 days unless patient presented with seizures at the onset of SAH. • Levetiracetam is used frequently because of its high bioavailability, favourable side effect profile and minimal drug interaction.

Delayed cerebral ischaemia: • Defined as any neurological deterioration that persists for more than 1 hour and cannot be explained by any other neurologic or systemic conditions, such as fever, seizures, hydrocephalus, sepsis, hypoxemia, sedation and other metabolic causes. • A diagnosis of exclusion • Occurs 3 to 14 days after SAH • Risk factors *SAH thickness *intraventricular haemorrhage *high score on the modified Fisher Scale *poor clinical grade *loss of consciousness at ictus *cigarette smoking *cocaine use *systemic inflammatory response *hyperglycaemia *hydrocephalus *non-convulsive seizures	• Calcium channel blockers (nimodipine) and maintenance of normal intravascular volume status are prophylactic interventions used. • Nimodipine 60mg every 4 hours for 21 days • Hypotension (which may lead to hypoperfusion) is a common side effect requiring a dose reduction with an increase in frequency to 30 mg every 2 hours • Hypervolemia must be avoided • In the presence of cerebral salt wasting fludrocortisone may need to be used every 12 hours.
Medical Complications	Management
Cardiopulmonary complications: • Range from minor ECG changes to severe stress cardiomyopathy and neurogenic pulmonary oedema. • Troponin can be elevated • Pulmonary oedema can lead to hypoxia	• Appropriate medical management as per recommended guidance
Fever: • Most common complication (in up to 70% of patients) • More likely to occur in patients with high grade SAH and poor neurological status	• Monitor temperature • Antipyretics • Rule out or treat infectious aetiology • Shivering should be strictly avoided
Thromboembolism: • Deep vein thrombosis occurs in 2 to 20% of screening method • Patients with high grade SAH are at greatest risk	• Pneumatic compression devices • Chemoprophylaxis is initiated immediately after endovascular aneurysm repair and within 24 hours after craniotomy and clipping.
Glycaemic dysfunction: • Common due to stress • Associated with delayed cerebral ischaemia and poor clinical outcome	• Maintain a blood glucose level between 80mg/dl and 200 mg/dl (6,7)
Hyponatremia: • Most common electrolyte disorder in SAH • Most common is cerebral salt wasting • Syndrome of inappropriate secretion of antidiuretic hormone is rare	• Cerebral salt wasting is managed with fluid administration and sometimes with continuous infusion of hypertonic saline (1.5% to 3%) and fludrocortisone if diuresis and natriuresis impede maintenance of adequate volume status • SIADH is managed with fluid restriction and sometimes diuresis with loop diuretics.
Anaemia: Haemoglobin less than 9g/dl is associated with delayed cerebral ischaemia and poor clinical outcomes	• Goal haemoglobin at least 10 g/dl to 11.5g/dl

Table 3: Neurological and Medical Complications

Prognostication after SAH

World Federation of Neurological Surgeons Scale and the Hess and Hunt Scale help discriminate high risk from low risk patients in the population but they cannot be applied for individual patients. Factors such as patient values and preferences, comorbidities, social networks and resilience affect outcome. All efforts should be made to save patients even with high grade SAH unless they present with bilaterally dilated pupils and a head CT or DSA is inconsistent with brain perfusion and life. Adequate protocolized neurocritical care should be provided for the first 2 weeks before advanced directives and relatives wishes are taken into consideration.

The recently published Functional Recovery Expected After Subarachnoid Haemorrhage (FRESH) scale prognosticates expected 12 month cognitive outcome and quality of life after SAH (14).

Conclusion:

SAH is a life threatening, neurological emergency carrying a high morbidity and mortality. Early recognition and prompt protocolized management along published guidelines with early detection and management of life threatening complications help reduce mortality.

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BATTICALOA MEDICAL JOURNAL
Volume 10, Issue 01 May 2019, Biannually
The official publication of the Batticaloa Medical Association
ISSN 1800 - 4903

BRIEF NOTICE

Mindfulness: An antidote for Perfectionism

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Perfectionism, a personality trait is described as striving for flawlessness and setting high performance standards, accompanied by critical self evaluations and concerns regarding others' evaluations of oneself. Generally it is seen as a positive trait that motivates a person and increases chances of success but more often than not it involves a tendency to set standards that are so high that they either cannot be met or are only met with great difficulty compromising one's health. Striving to attain unobtainable goals will set a person up for disappointment and they will measure their self worth by their accomplishments. Leonardo Da Vinci, Steve Jobs, Serena Williams, Kim Kardashian, Eminem, Daniel Craig are some famous perfectionists who were never satisfied with their work.

Perfectionism can be classified into two categories, as described by D.E.Hamachek in 1978.Perfectionism can be either be "normal perfectionism" or "neurotic perfectionism". Normal perfectionists pursue perfection without compromising their self esteem, and derive pleasure from their efforts. Neurotic perfectionists are prone to strive for unrealistic goals and feel dissatisfied when they cannot reach them and they consider their mistakes as a sign of personal defects and are anxious about potential failure, making perfectionism a burden for them.

Perfectionism goes hand in hand with Obsessive Compulsive Disorder(OCD) in which people have recurring unwanted thoughts (obsessions) that make them feel driven to do something repetitively(compulsions).Chances of having unhealthy perfectionism tends to be very high if a person feels that compulsions have to be done perfectly without any errors. These people are tied to the excessive fear of making a catastrophic mistake.

Unhealthy perfectionism can be identified if a person has the following thought patterns

Black and white thinking-

"my efforts are either a success or they are a failure"

"Other people are either all good or all bad"

"Anything less than perfection is a failure"

Catastrophic thinking-

"If I make a mistake I won't be able to handle the humiliation"

"If I'm sick and I can't attend lectures my friends will think I'm lying and they will get angry with me"

Probability overestimation-

"Although I spent all night preparing for the presentation I know I won't do well"

Should statements-

"I should never make mistakes"

"I should know everything before going for an examination"

Chronic procrastination-difficulty starting a task because not starting means they won't fail at it.

Overly cautious and thorough in tasks-Taking days to complete something that could be finished in a few hours

Excessive checking

Agonizing over small details

Avoiding trying new things

Perfectionism will ultimately lead to low self esteem, anxiety, depression and chronic stress. It could also lead to eating disorders such as Anorexia Nervosa, social anxiety, social phobia as well as physical problems such as heart disease. Perfectionism is a lifelong trait of anorexics as they strive for thinness and perfection when it comes to their body. Usually perfectionists do not know when they should stop working and this leads to fatigue and exhaustion which

ultimately results in a burnout. When this happens the risk of not completing a task or being imperfect blows out of proportion ultimately leading to maladaptive anxiety. Perfectionism is also linked to suicide as they have excessively high expectations and are self critical when their efforts do not meet the standard they have established and their tendency to show a "perfect face" to the world increases their risk of suicide.

People who struggle with perfectionism are constantly dissatisfied as they have the ever-present voice in their head reminding them of how much there is to do and how bad they should feel if they don't accomplish it .Aside from the guilt and frustration that results from this persistent inner critic, perfectionism makes it truly difficult to enjoy things in life and find genuine satisfaction. The problem is perfectionists always look ahead to new tasks or behind to old failures. This is the basis of why mindfulness is extremely effective as a therapeutic method of treatment for those who are suffering from perfectionism.

The goal of mindfulness is to practice awareness at the present moment and accept it without judgement. The tricky part for perfectionists is to look at thoughts without judgement because perfectionists are conditioned to judge themselves and others at all times. Letting go of the judgment is the best way to overcome maladaptive perfectionism. Mindfulness involves accepting reality and the present moment as perfect, not trying to do things perfectly or make things perfect. Acceptance of the present moment is allowing oneself to be open to reality to experience events to the fullest in the present moment. People who struggle with acceptance may avoid experiences and situations and they may not accept their thoughts .This is seen in perfectionism where people suppress their thoughts and avoid situations which ultimately leads to anxiety and depression.

Being mindful starts with accepting that we cannot be fully mindful in the first place. Imperfection is the norm. Usually people spend a lot of time focusing on the future or the past and rarely do they focus on what they are doing at that time. People fail to notice the assumptions and choices that they are making through the day. When practising mindfulness, it is difficult to pay attention for long. Over and over, our mind gets distracted and our mind has to be brought back to reality once again. When this happens perfectionists are disappointed for not being able to do it perfectly and by learning to let go of that thought of trying to be perfect they will learn to do their best without self judgement.

Not only perfectionists all of us can benefit from taking a few moments to focus our attention to settle our busy minds or to build awareness of the assumptions and habits that drive us. All of us are imperfect and if someone is of the view that they could ever be perfect, mindfulness will help to let go of that idea and to be aware of the reality. We have absolutely no control over the future and there's nothing that could be done to change our past. But we are in control of what's happening to us right now, in this moment. Therefore mindfulness is not perfectionism it is indeed the antidote to perfectionism.

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