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Case Report: Enteric with Twist

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Abstract

A rare presentation of enteric fever with multi organ failure in a 10-year-old female is reported in this paper. Blood culture was positive for salmonella typhi, widal test was positive with titers of O 1:320. She had disseminated intravascular coagulation, acute respiratory distress syndrome, acute renal failure, hemolytic uremic syndrome, myocarditis, rhabdomyolysis, pancreatitis, encephalopathy, hypertension, and left sided pneumonia with pleural effusion. Laboratory levels of urea, creatinine, amylase, lipase, CPK, LDH were very high. She was on ventilator support, hemodialysis, inotropic support, antihypertensives, antiepileptics, antibiotics, nebulization, and other supportive care. She gradually improved and was discharged after a month of stay in Pediatric intensive care unit.

Keywords: *ARDS, ARF, DIC, Encephalopathy, Myocarditis, Pancreatitis, Rhabdomyolysis, Pancreatitis.*

Introduction

Enteric fever is a systemic infection caused by gram negative bacilli, s.typhi. It has a wide spectrum of clinical presentations. This disease is most common in developing countries like India. The rare manifestations include gastrointestinal bleeding, intestinal perforation, pancreatitis, endocarditis, orchitis, myocarditis, parotitis, pneumonia, arthritis and osteomyelitis.

Case Report

A 10 year old female presented with fever of high grade, vomiting, loose stools for 4 days. She was admitted and treated with ciprofloxacin at a private Hospital .She developed acute respiratory distress syndrome and ventilated on day 2. Patient was on inotropic support, two cycles of hemodialysis were done for acute renal failure **(**anuria and creatinine level were very high -3mg/dl**)**. Blood culture grew salmonella typhi. She had one episode of cardiopulmonary arrest, resuscitated and revived. On parents request patient was shifted to our hospital on ventilator after three days. In the course of hospital stay, she was continued on ventilator support on PRVC mode with high ventilatory settings. and inotropic support with dopamine, adrenaline, milrinone.

Intial echocardiography (ECHO) was done, which showed dilated Left Atrium(LA), Left ventricle (LV), Ejection Fraction(EF) = 30% and globally decreased Left Ventricular function. Chest skiagram was done suggestive of acute respiratory distress syndrome. She developed disseminated intravascular coagulation (DIC)- persistent thrombocytopenia and prolonged PT/APTT.As blood culture grew nalidixic acid resistance salmonella typhi, intravenous meropenem was started. She had severe metabolic acidosis. In view of low urine output and high S creatinine level (3.7 mg/dl), dialysis was done every day for 6 days and alternate day for 10days. Patient remained anuric hence frusemide challenge was given for 4 days.By the end of 3rd week she started voiding urine. Peripheral smear showed normocytic normochromic anemia with crenated RBC, few burrcells, few schistocytes with thrombocytopenia (platelet count 30,000/mm3) suggestive of microangiopathic hemolysis. Initially the serum lactate dehydrogenase (LDH) level was 3947 IU/L which later showed decreasing trend.She remained hypertensive till the time of discharge needing antihypertensives to control blood pressure. In view of myocarditis at presentation high dose of dexamethasone was administered. Patient developed one episode of generalized tonic clonic seizures with waxing and waning sensorium and had one episode of perioral twitching which was controlled with intravenous lorazepam and phenytoin. Computerized tomography (CT) head was done which showed bilateral symmetric white matter hypodensities in occipital lobe suggestive of posterior reversible encephalopathy syndrome (PRES).

Later MRI brain was done which showed persisting PRES changes with old infarct in posterior fossa and left frontal lobe. Her muscle tone and reflexes could not be assessed for first 5 days. Her CPK level was checked in view of prolonged immobilization, which turned out to be very high (6039 U/L). Trial of extubation was done on day 11 . Due to the poor respiratory effort and poor gag reflex, patient was reintubated on low ventilator settings. Later patient was extubated and tracheostomy was done anticipating long time to recovery.She developed left sided hemothorax , left inter coastal drain (ICD) was inserted. In order to rule out tracheal tear or perforation, CT chest with contrast was done which showed no evidence of tracheal tear along with bilateral lower lobe consolidation left>right.

Serial X-Ray chest was done which showed left pleural effusion. Hence, ICD was re-inserted drawing serosanguineous fluid.The report of pleural fluid examination shows WBC 1150 cells/mm3, Neutrophils 3%, Lymphocytes 97%, RBC 1000/mm3. Pleural fluid culture and sensitivity yields no growth.She developed pain abdomen and abdominal distension , CT abdomen was done it showed bulky pancreas, S-amylase was high (i.e. 147IU/micro ml). Her liver enzymes were also very high presentation which returned to normal by 2nd week. Patient was also treated with nebulizations, IV fluids, electrolyte corrections along with other supportive care.

After a month stay in PICU she was maintaining saturation in room air. Her serial echo cardio gram was normal. Oral feeds were gradually introduced. Later tracheostomy tube was removed and she was maintaining saturation in room air. Physiotherapy was given and she started mobilizing slowly. She was discharged only on antiepileptic drugs which was later tapered and stopped on outpatient basis. Other investigations - HIV1, 2 and hepatitis B&C were non reactive. Serum procalcitonin **(**23.21/3.19ng/ml**)**, Dengue IGM, IGG were non reactive.

Discussions

Enteric fever with multi organ failure is being reported in adults, rarely seen and reported in pediatric population . Our patient who is 10 year female presented with multi organ failure. It has been reported that up to 10% of acute typhoid fever may develop serious complications intestinal as well as extra intestinal depending on the clinical setting and quality of available medical care **(**1**)**.Incidence of cardiac involvement is variable and very rare in pediatric population .Toxic myocarditis which present as arrhythmias sinoatrial block or cardiogenic shock, this complication occurs in 2nd week **(**1**)**. Characteristic pathological features are inflammation of the intramural vessels, microcirculatory disturbance, odema, lymphocytic, and macrophagic infiltration of the stroma, sometimes with formation of granuloma and dystrophic or necrotic changes of cardiac myocytes **(**1**)**.

Echocardiogram showed evidence of myocarditis was present in this case. It is indicated to use dexamethasone judiciously in selected case of severe myocarditis **(**1**)**. Hemolytic uremic syndrome is a condition in which ARF is associated with microangiopathic hemolytic anemia, occurrence of Hemolytic uremic syndrome is frequent in gram negative coliform enteric infection **(**2**)**. Salmonella organism producing Hemolytic uremic sydrome even though rare is also reported **(**3-6**)**. It was proposed that salmonella endotoxin could cause glomerular micro angiopathy with renal intravascular coagulation leading to features of red cell fragmentation and renal failure **(**7-8**)**.

Our patient was also complicated by critical care myopathy**(**rhabdomyolysis**)** CPK levels being very high . Rhabdomyolysis is the breakdown of muscles fibres with leakage of potentially toxic cellular contents into the systemic circulation.There will be hypovolemia due to sequestration of plasma water within injured myocytes ,hyperkalemia due to release of cellular potassium in to the systemic circulation, metabolic acidosis due to release of cellular phosphate and sulphate ,acute kidney injury due to nephrotoxic effects of liberated myocyte components and disseminated intravascular coagulation due to thromboplastin release from injured myocytes.Rhabdomyolysis has been reported infrequently with salmonella species infection and only rarely with salmonella typhi**(**9-12**)**.

The classic triad of symptons include muscle pain,weakness,and dark urine.Only half of patient complain of muscle pain and a minority report dark urine**(**13**)**. The laboratory diagnosis is based on the measurement of CPK levels in serum. Total CPK levels are 5-10 times above normal. Plasma and urine myoglobin measurements might be useful in early stages of the syndrome and for identifying a subset of patients with minor skeletal muscle injury. A positive urine dipstick test for blood in the absence of red blood cells suggests myoglobinuria or hemoglobinuria. Urine dipstick findings are positive in fewer than 50% of patients with rhabdomyolysis therefore a normal urine dipstick test does not rule out this condition **(**14**)**.

Patient monitoring is pivotal since the mortality rate is as high as 8% and should focus on preventing the detrimental consequences that often include acute kidney injury and coagulopathy**(**15**)**. Our patient here is a pediatric patient had a complicated course which is rarely seen. All cases reported earlier with complicated course have been reported in adults.Our patient had pancreatitis, encephalopathy, hypertension along with above complications mentioned. Early diagnosis, high level of critical care, earliest interventions for all complication helped us to manage this case .It is indicated to have high level of suspicion to look for all probable complication by observing clinical, laboratory and radiological parameters.

This case has been reported in view of multiple complications and multi organ involvement in a single patient.

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