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Case Report

A Case Report of Meningococcal Septicaemia in a 2 Year Old Child

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Abstract

Acase of meningococcal septicemia in a male child was reported in Nov. 2014 at Government Medical College, Latur. The main features were fever with rash, respiratory distress since 4 days and altered sensorium since 2 days. The rash was purpuric and present all over the body including palms and soles. Gram stain from purpuric sites showed Gram negative diplococci suggestive of *Neisseria meningitidis.* In case of meningococcal disease, some patients develop acute meningococcemia whilst others develop meningitis. The mechanism is unknown, but the case fatality of acute meningococcemia is tenfold than that of meningococcal meningitis. It is possible that the delay in diagnosis of meningococcal disease with a maculo-papular rash alone might contribute to mortality as these children are thought to have viral illnesses and are not started on antibiotic treatment. Thus it is important to recognize this life-threatening condition in the initial stable phase to provide the emergency management so as to reduce mortality.

Keywords: Maculo-Papularrash; Meningococcemia; Neisseria meningitidis.

Case Report

A 2 years old male child was brought by parents with chief complaints of altered sensorium since 2 days and respiratory distress since 4 days. Child was well about 7 days back to start with fever without any association of chills and rigors, 2 days after fever child developed rash that appeared first on abdomen and gradually spread to hand, face, palm and soles. He was put on some medicines and then he developed respiratory distress and was referred to physician who felt need of admission. After admission he developed tonic-clonic seizures that lasted for 15min followed by unconsciousness for half an hour, the sensorium was deteriorating and the child remained unconscious for 24 hrs with increase in respiratory rate and was referred to our institute.

Child had past history of pneumonia 5 months back and was admitted in private hospital for 5 days. No significant birth history and immunization followed as national immunization schedule.

Physical examination showed that there was generalized maculopapular rash on the abdomen, palm, soles, face and limbs (Fig.1). Sub occipital lymph node was negative. There was no neck rigidity. Chest, cardiac and abdominal examination did not reveal any abnormality.

Laboratory Diagnosis

After initial investigations, multiple slit skin smears were taken from the sites of purpura and were stained with Gram's stain. They showed plenty of epithelial cells and neutrophils with gram negative diplococci. CSF microscopy showed 10cell/cumm

with predominant lymphocytes. CSF sugar and proteins were normal.Further investigations showed white cell count of 10500 with neutrophilia; platelet count were reduced to 54,000/cu.mm; D-Dimer was significantly raised (10,400).

5ml of blood was taken and inoculated into the Brain Heart Infusion broth. Also, fluid from the slit skin smear of the purpuric sites wasdirectly inoculated onto Blood agar and Chocolate agar. (All microbiological investigations including collection of sample for culture and inoculation onto appropriate media were done by the bedside under aseptic conditions) Both blood culture and culture from purpuric lesion grew organism which was catalase and oxidase positive, fermented glucose and maltose and Gram stain showed Gram negative diplococci suggestive of *Neisseria meningitidis* (fig. 2-3), which was sensitive to cefotaxime, ceftriaxone, ciprofloxacin. He was subsequently transferred to ICU for treatment. Intravenous antibiotic including ciprofloxacin and cefotaxime were administered.The diagnosis was established as Purpura Fulminans following meningococcal-septicaemia. The patient expired within 48 hours of admission to our institute. Post mortem was not done as the diagnosis was well established.

Fig. 1: 2year old boy with extensive purpuric rashes.

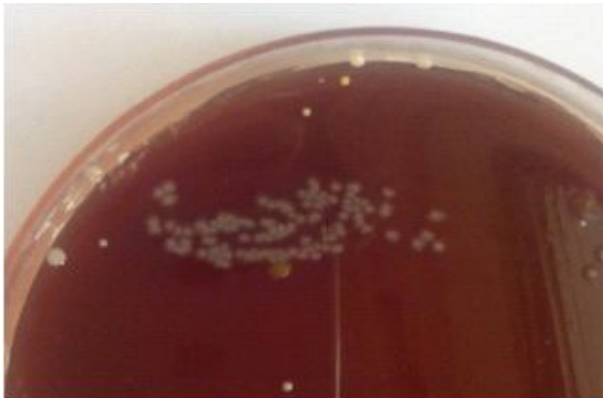

Fig. 2: Colonies of *N.meningitidis* grown from blood culture.

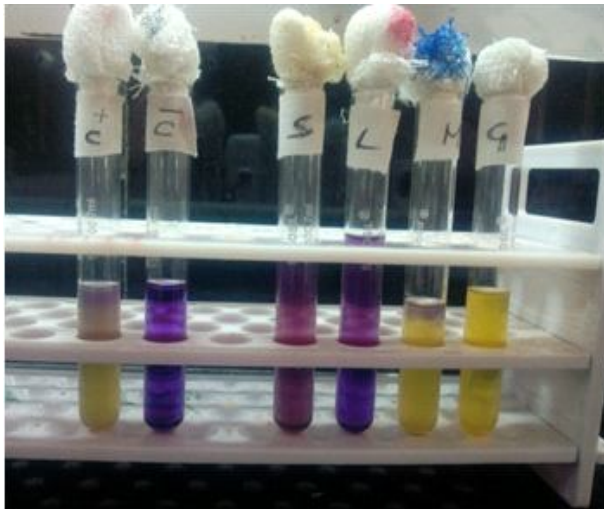

Fig. 3: Sugar Fermentation test.
C+ = Positive control: C- = Negative control
G= Glucose: M = Maltose: L = Lactose: S= Sucrose
Figure showing fermentation of glucose and maltose but not of Lactose and Sucrose as compared to positive and negative control.

Discussion

In meningococcal infections, some patients develop acute meningococcemia whilst others develop meningitis. The mechanism is unknown, but the case fatality of acute meningococcemia is tenfold than that of meningococcal meningitis, which is generally less than 5%. The initial treatment for both conditions is the same [1].

Maculopapular rash alone in meningococcal infection has also been reported in fatal cases and it is possible that the delay in diagnosis of meningococcal disease with a maculopapular rash alone might contribute to mortality as these children are thought to have viral illnesses and are not started on antibiotic treatment [2,3]. Although the maculopapular rash is the distinctive sign of menin-gococcal infection, it is seen in only 7% of cases.The rash may rapidly evolve into prominent petechiae and purpura and may progress to purpura fulminans, a necrosis of the skin and under-lying tissues due to thrombosis [4].

Purpura Fulminans (PF) is a hematological emergency in which there is skin necrosis and disseminated intravascular coagulation. This may progress rapidly to multi-organ failure caused by thrombotic occlusion of small and medium-sized blood vessels. PF may complicate severe sepsis or may occur as an autoimmune response to otherwise benign childhood infections [4]. PF may also be the presenting symptom of severe heritable deficiency of the natural anticoagulants protein C or protein S

[5,6]. Early recognition and treatment of PF is essential to reduce mortality and to prevent major long-term health sequelae. However, management strategies require accurate identification of the underlying cause [5].

Conclusion

The aim of this case report is to emphasize the importance of bed side diagnostic microbiological procedures like slit skin smear and Gram stain which helped us in the prompt diagnosis and treatment of the underlying cause (meningococcal septicaemia).

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