Meningococcaemia: Experience at a Tertiary Care Hospital in East Delhi

Dear Editor,

Meningococcal disease is an acute bacterial infection caused by the gram-negative diplococci Neisseria meningitidis. It was first described in 1805 when an outbreak swept through Geneva, Switzerland. It manifests in two predominant forms — more common is meningococcal meningitis (75%) and the less common but more severe and often fatal form is meningococcemia or meningococcal septicemia (20%). Of the 13 serogroups of N.meningitidis identified (A, B, C, D, 29E, H, I, K, L, W-135, X, Y & Z) more than 99% of the infections are associated with serogroups A, B, C, 29E and W-135. The pathogenicity, immunogenicity and epidemic potential differ according to serotype. Around 20% of the people will be carrying the organism in the throat and back of nose without ever becoming ill.

The earliest record of an outbreak in India was in the year 1883. Major outbreaks in the country had all occurred in Delhi: in 1966 - 616 cases; in 1985 – 1731 cases and 569 deaths; in 1986 – 6133 cases and 799 deaths.

The first case of the present outbreak came to National Institute of Communicable Disease (NICD) from St. Stephen’s hospital on 24th of April 2005. From then onwards, cases started pouring in, in different hospitals in Delhi. At our Institution, University College of Medical Sciences and Guru Teg Bahadur Hospital, suspected cases of Meningococcal Meningitis and Meningococcemia. We had a total of 22 clinically suspected cases of Meningococcal diseases. The age group ranged from 2½ years to 70 years with 10 cases in the pediatric age group and 12 cases in the adult age group. Overall, the disease affected both the sexes equally; however, females were more common in the pediatric age group whereas it was just opposite in case of adults. Meningococcemia cases were more than Meningococcal Meningitis. Samples of all suspected cases that came to the Microbiology laboratory of UCMS were processed immediately. Gram stain smear of centrifuged deposit of CSF were checked for gram-negative diplococci with a predominant pyogenic reaction. The deposit were then inoculated on chocolate agar, blood agar and MacConkey agar plates and incubated at 37°C in a candle jar. Due to unavailability of antigen detection kit, Meningococcal antigen could not be detected in the CSF supernatants. In a total of six CSF samples (4 pediatric and 2 adult cases) gram-negative diplococci with a predominant pyogenic reaction were seen. Smear was also positive for meningococci in two adult cases of Meningococcemia, where the smear was prepared from the haemorrhagic rash of the patients. However in none of these cases the organism could be isolated from culture. The culture yielded positive results from blood culture after 24 hours of incubation in a 4½ year old female child. Gram stained smear from culture showed gram-negative cocci and oxidase test was positive. Rapid Carbohydrate Utilization Test (RCUT) showed a distinct yellow colour with glucose and maltose (Figure). Similar results were noted after overnight incubation using the same sugars when Hiss’s serum sugar test was performed. Subculture of the organism was sent to NICD for serotyping and antibiotic susceptibility pattern. The isolate was serotype A and sensitive to the following antibiotics – Penicillin, Ampicillin, Cefotaxime, Ceftriaxone and Ciprofloxacin, Chloramphenicol and Rifampicin by E-test. PCR assay of the culture isolate amplified a specific product of 230 base pair. This PCR assay was based on conserved regulatory gene of N.meningitides (ergA) and had a sensitivity of 93% and specificity of 96%. This child survived after antibiotic treatment and was discharged.

Acknowledgement

We acknowledge the help of Dr. Sunil Gupta from the Microbiology section of NICD, Delhi, for serotyping and performing the antibiotic susceptibility of our isolate. We also acknowledge the help of Dr. Bimal Das from the Microbiology Department of AIIMS, New Delhi, for doing the PCR.

References

2. Schwartz B, Moore PS, Broome CV. Global epidemiology of...
Arcanobacterium haemolyticum was first reported in 1946 from American soldiers with pharyngitis and skin infections. \cite{1}

Reports on the association of \textit{A. haemolyticum} with urinary tract infections are scanty in medical literature. We report a case of urinary tract infection caused by this bacterium.

Gram positive rods (>10$^5$ CFU/mL of urine) grew from the mid stream urine sample of a 58 year old female who complained of dysuria, urgency and frequency of micturition. To rule out the possibility of vaginal contamination and to establish the etiology, a repeat sample was requested. The second sample on gram staining showed long gram positive bacilli and pus cells. Colony counts performed with the repeat sample yielded similar results.

The blood agar plates on the second day showed narrow zones of beta hemolysis. Pitting was also noticed. MacConkey agar showed no growth. Based on the biochemical reactions, the isolate was identified as \textit{A. haemolyticum}. \cite{2}

Antibiotic sensitivity testing done by Kirby Bauer method as per the NCCLS standards showed that the isolate was sensitive to commonly used antibiotics like erythromycin (15 mg), penicillin (10 units), vancomycin (30 mg), ampicillin (10 mg), amoxicillin/clavulanic acid (10 mg), ciprofloxacin (5 mg), amikacin (30 mg), and cefotaxime (30 mg). \cite{3}

The patient was administered amoxicillin (500 mg thrice daily) and was asked to report seven days later for a review. In the review that followed, she was found cured of infection. Laboratory findings including a urine culture supported this.