Typhoid Meningitis

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Summary

Salmonella typhi meningitis is rare. It usually is a complication of typhoid fever but may present as a primary pyogenic meningitis. A case of *Salmonella typhi* meningitis in which hepatic dysfunction was also a feature is described.

Case Report

The patient is a 25 year old Japanese male tourist who presented to the Patan Hospital Emergency Room in a semiconscious state. He was unable to give a history and the only information that the Japanese Embassy could obtain was that the patient had stayed in his hotel room for two days without eating and hotel staff became worried and called the embassy. We were never able to find out how long he had been ill.

On the initial examination he was conscious but confused, delirious, uncooperative with unintelligible speech (his mouth was dry and he may have been trying to speak Japanese rather than English). The temperature was 101.8° F axillary and the pulse was 141 beats per minute. The pupils were equal and reactive to light. There was scleral icterus and the conjunctivae were injected. There was no ear infection. The neck was rigid with a positive Kernig's sign. The lungs were clear and there was no respiratory distress. The heart was normal. The liver and spleen were not palpable. There were several healing abrasions and insect bites but no rash.

A lumbar puncture yielded bright yellow cloudy CSF under increased pressure (See Table). A gram stain of the CSF showed numerous gram negative rods and the culture grew *Salmonella typhi*. A blood culture was not done.

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The patient was started on IV chloramphenicol, 5 grams per day (100 mg./kg.). The night of admission he developed urinary retention and a foley catheter was inserted. The second hospital day he was less responsive, not understanding or following commands in Japanese but occasionally making eye contact and purposeful movements. On the third day he was more obtunded and was found to have a right facial paralysis, flaccid paralysis of the right upper extremity and weakness of the right lower extremity. On the fourth day there was a temperature spike to 102.8° F with a pulse of 164 beats per minute, tachypnea, intercostal retractions, cyanosis and bloody secretions from the upper airway. A chest X-ray showed patchy infiltrates in both lung fields. A cephalosporin antibiotic and oxygen were started for treatment of a hospital acquired pneumonia.

After treatment for the pneumonia the patient began to slowly improve. The right hemiparesis and the right facial paralysis completely resolved but he continued to have expressive aphasia up till the time of discharge. The cephalosporin was stopped after 5 days and chloramphenicol was changed to the oral route at the same dose after one week of IV therapy.

A repeat lumbar puncture after two weeks of chloramphenicol showed improvement (See table). At this time the patient was clinically doing well except for the aphasia because of the persistent low CSF sugar chloramphenicol was continued. Five days later repeat CSF showed further improvement but the sugar was still not back to normal. Chloramphenicol was continued and the patient was sent back to Japan for further evaluation and for speech therapy.

Discussion

Salmonella meningitis is rare and usually occurs in children, particularly neonates. Several species have been isolated from the CSF including *S. paratyphi* B, *S. typhimurium*, *S. enteritidis*, while *S. typhi* has only rarely and sporadically been incriminated in pyogenic meningitis. Appelbaum and Scrugg (1977) studied 61 children with *Salmonella* meningitis and found only six were due to *Salmonella typhi*.

S. typhi meningitis is usually a complication of typhoid fever in which fever and bowel symptoms are the presenting features but Channugam, Machada, and Mihindalculasuriya (1978) reported a case of primary *Salmonella typhi* meningitis in a young Sri Lankan woman. Watson (1967) has described 12 cases where *S. typhi* was isolated from a routine blood or clot culture but the patients did not have clinical features characteristic of typhoid fever. It is postulated that asymptomatic *S. typhi* bacteremia seeds the meninges and subsequent multiplication leads to *S. typhi* meningitis without preceding typhoid illness.

In this patient I cannot say whether this is a case of typhoid meningitis complicating typhoid fever or primary typhoid meningitis. Since the patient remained aphasic and he was travelling alone we were never able to get a history of the illness. He had mild hepatitis on admission. Jaundice may be observed during the course of typhoid fever and is usually the

result of intrahepatic cholestasis. According to Adams (1983) jaundice may be noted in about one percent of adult cases and has no clinical significance. Transaminase levels are also raised. In studies of unselected cases of typhoid fever approximately half of the patients had biochemical evidence of active liver disease which returned to normal after recovery. In the case presented if the hepatitis was due to typhoid fever then the meningitis was a complication of the typhoid fever. However without a better history I cannot say that the patient did not have viral hepatitis followed by primary typhoid meningitis but would prefer to just make one diagnosis.

Conclusion

Salmonella typhi meningitis should be considered in the differential diagnosis of pyogenic meningitis especially if gram negative rods are seen on the gram stain.

TABLE OF LABORATORY RESULTS

	Admission	15th hospital day	17th hospital days
CSF protein	644 mg%	124 mg%	100 mg%
CSF sugar	2 mg%	18 mg%	16.3 mg%
CSF WBC	9,300/cu. mm.	500/cu. mm.	75/cu. mm.
neutrophils	95%	54%	12%
lymphocytes	10%	46%	88%
Gram stain	Gram neg. rods	negative	
Culture	<i>Salmonella typhi</i>	negative	
WBC	6 400/cu. mm.		
Total bilirubin	11.4 mg%	1.75 mg%	
SGOT	171 SF units	31 SF units	

References

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