

## Bilateral Subdural Empyema Caused by Salmonella paratyphi A

### Salmonella paratyphi A Etkenli İki Taraflı Subdural Ampiyem

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**Abstract:** A 13 month old girl with bilateral subdural empyema that was shown to be caused by Salmonella paratyphi A is presented. Twenty-four cases of subdural empyema caused by Salmonella species/strains are reported in literature. Subdural empyema that is caused by Salmonella paratyphi A has not been described previously. Treatment consists of surgical decompression by craniotomy and systemic antibiotics in this case.

**Key Words:** Craniotomy, Salmonella paratyphi A, subdural empyema.

**Özet:** Etken olarak Salmonella paratyphi A'nın üretildiği, iki taraflı subdural ampiyemi olan 13 aylık bir olgu sunuldu. Literatürde etkeninin Salmonella olduğu bildirilen 24 subdural ampiyem olgusu vardır. Ancak, Salmonella paratyphi A'nın neden olduğu subdural ampiyem olgusu bildirilmemiştir. Bu olguda, kraniyotomiyle cerrahi dekompresyon ve sistemik antibiyotik tedavisi şifa sağladı.

**Anahtar Sözcükler:** Kraniyotomi, Salmonella paratyphi A, subdural ampiyem

### INTRODUCTION

Subdural empyema due to salmonellosis is an extreme type of infection of the central nervous system or its coverings. Twenty four cases with subdural empyema of any serotypes of Salmonella have been reported in literature so far (2, 3, 6, 7, 9). We present an unusual case of subdural empyema caused by Salmonella paratyphi A which is the first case as to our knowledge.

### CASE REPORT

A 13 month old girl was admitted to our Outpatient Clinic with a 4-day history of irregular fever, poor feeding, irritability and vomiting. On

examination she was conscious, interested in the environment, but was extremely irritable. The anterior fontanel was 3x3 cm in dimensions, and tense. Laboratory investigation revealed that hemoglobin level was 6.5 g/dl, and total white cell count was  $20.3 \times 10^9/l$  with normal differential. Erythrocyte sedimentation rate was 55 mm in the first hour and 120 mm in the second hour. Blood and stool cultures were sterile. Widal test was negative. Contrast enhanced cranial CT showed bilateral fronto-temporal subdural collections with marked compression of bilateral frontal horns of the lateral ventricles (Figure 1). Immediately, aspiration under local anesthesia by 16 gauge needle was carried out, and 50 ml of pus was drained. Gram stain of the pus smear revealed polymorphonuclear



Figure 1. Contrast enhanced CT scan showing bilateral loculated subdural empyema.

leucocytes, and its culture showed *Salmonella paratyphi A* as the causative organism. The culture for anaerobic organisms was sterile. Antibiotic medication was started with ampicillin (50 mg/kg), and chloramphenicol (30 mg/kg) intravenously after the first drainage. Daily drainage of pus was continued for three days. Since tenseness of anterior fontanel and high fever continued the source of infection was removed by bilateral frontal craniotomy, the subdural collection of pus was totally drained, and the membranous structures were excised as much as possible. The patient recovered rapidly following the operation and was discharged 4 weeks after admission with a prescription of 4 weeks' antibiotic treatment.

At one and a half year's clinical and radiological (Figure 2) follow-up the patient did well, no neurological and infectious complications occurred.

### DISCUSSION

*Salmonella* may cause focal intracranial infection such as brain abscess, subdural empyema and epidural abscess (11). Subdural empyemas due to salmonellosis are extremely uncommon and reviewing of the literature related to this condition disclosed only 24 previously reported cases (2, 3, 6, 7, 9). Only four cases with bilateral empyema were found among these cases (7, 9). Our patient is the fifth case with bilateral subdural empyema.

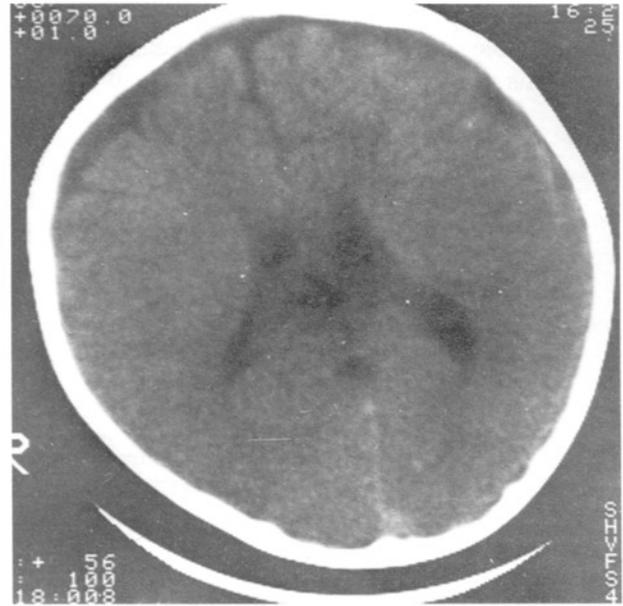


Figure 2. Control CT scan one year after the operation.

*Salmonella typhi*, *S. typhi murium*, *S. enteritidis* have been reported as infecting organisms previously (2, 6, 9). In our case, *Salmonella paratyphi A* was the causative organism, and it is the first report in literature.

Subdural infection may occur after surgery, trauma, meningitis, paranasal sinusitis or it may be the manifestation of a hematogenous disease. The source of infection may remain unknown (5, 9, 11). Although the patient had a history of a minor head injury about one and a half month prior to admission it is improbable that the empyema is result of this event. Other than this there was no infectious disease in the family history at that period.

Prompt and effective treatment of cranial subdural empyema is essential. There are three basic principles in literature to treat cases with subdural empyema; early removal of the source of infection, drainage of subdural pus, and using the appropriate antibiotic medications (1). Delay in diagnosis and treatment is a major factor contributing to poor outcome in these cases (11). There is an extensive debate in literature concerning the correct mode of neurosurgical treatment; burr-hole drainage versus craniotomy (1, 4, 5, 10, 11). The advantages and disadvantages of both modes are reported extensively in literature (1, 4, 5, 10, 11). We share the same opinion with some authors that craniotomy may be appropriate for diffuse and very large

collections of pus, whereas burr-hole drainage is more suitable for relatively small and well localized collections and in patients with poor clinical status (5, 8).

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