

Listeria Meningitis : Report of Two Cases in Thailand

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Abstract

Two cases of listeria meningitis with septicemia were reported from Buddhachinaraj Pithsanuloke Hospital. The first case was Thai male farmer, with a history of chronic increased intracranial pressure for two months, and presented with signs and symptoms of severe headache and repeated convulsions. A computerized tomographic (CT) scan of the brain showed obstructive hydrocephalus. Ventriculoperitoneal shunt (VP shunt) was performed and CSF examination revealed only 29 lymphocytes, but the CSF culture and hemoculture showed coccobacilli organisms that later identified as *Listeria monocytogenes*. Aqueous penicillin G sodium 24 million units/day was administered. The patient's condition was improved in the first week of treatment but 1 month later he had second admission because of headache and drowsiness. CSF examination was normal, and cloxacillin was chosen for intravenous therapy for two weeks. He was eventually discharged in a satisfactory condition.

The second case was a 66-year-old Thai male with a history of heavy alcoholic drinking. He was referred from a community hospital because of fever and alteration of consciousness. Physical examination revealed meningeal sign and CSF examination showed 10 PMN. CSF cultures and hemocultures yielded *L. monocytogenes*. In spite of a proper antibiotic treatment for meningitis, this patient was later expired because of respiratory failure. (*J Infect Dis Antimicrob Agents* 1995;12:69-71.)

Listeria monocytogenes is a short gram-positive bacillus which can cause serious infections in immunocompromised hosts, including patients with malignancies and those receiving immunosuppressive therapy. In addition, pregnant women and their newborns are particularly susceptible to listeriosis (1-3). The most common clinical presentations are central nervous system (CNS) infections and primary bacteremia (4-7). Interest in *L. monocytogenes* had grown up during the 1980s following the increasing reports of incidence of listeriosis. At the same time, the number of susceptible hosts are growing because of the increased use of immunosuppressive treatment of various diseases (8,9). In contrast to their apparent rarity among humans, *L. monocytogenes* infections occur commonly in a wide variety of animal species in many parts of the world. In Thailand *L. monocytogenes* infection is very rare.

The purpose of this communication is to report

two cases of listeria meningitis with septicemia in patients who had no immunocompromised status.

REPORT OF CASES

Case I

A Thai farmer, 46-year-old male, from Pithsanuloke was referred from a community hospital with history of repeated convulsions. Two months before admission, he had complaints of headache and blurred vision with some improvement by analgesics. Four days prior to admission, he developed high fever with chill and 2 days later he had severe headache with nausea and vomiting and became drowsy. Before admission he successively developed generalized convulsion, which lasted for four hours.

On admission he was drowsy. Body temperature was 39 °C, blood pressure was 150/90 mmHg, and pulse rate 98/min. The neurological examination revealed drowsy

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consciousness and papilledema of both eyegrounds, with no other abnormality. The hematologic study showed WBC of 35,000 cell/mm³ with 33% band form of polymorphonuclear cells, 42% of mononuclear cells, and no malarial parasite. Blood urea, serum creatinine and electrolyte were within normal limits. CT scan showed dilatation of the lateral and third ventricles with normal fourth ventricles, indicating of an obstructive hydrocephalus (Fig. 1-4). Ventriculoperitoneal shunt was performed. The examination of CSF collected during operation showed 29 lymphocytes and no bacteria seen by gram stain, protein level of 20 mg/dl and a glucose level of 88 mg/dl with simultaneous serum glucose of 198 mg/dl. On the second hospital day, coccobacilli organism was grown, the organism was later identified as *L. monocytogenes*. The organism was sensitive to penicillin, cotrimaxazole, erythromycin, chloramphenicol, ampicillin, cephalothin, cefotaxime and gentamicin. Aqueous penicillin G sodium 24 million units/day was administered intravenously.

The patient improved on the fourth day of treatment and CSF became sterile after 14 days of treatment. The patient was discharged with satisfactory normal sensorium.

One month later the patient noticed diffuse bifrontal headache and became drowsy again. The reservoir of the shunt showed intact function. CSF finding showed normal chemistry and no organism was found by culture. The patient received empirical therapy with cloxacillin 12 grams/day for 3 weeks period. Prompt defervescence was followed by clear of sensorium in 3 days.

Case II

A 66-year-old Thai male from Pithsanuloke was referred to Buddhachinaraj Pithsanuloke Hospital with the problem of alteration of consciousness. Two days prior to the admission, he developed fever with chill and severe headache with vomiting. One day before admission he became drowsy that prompted admission to a community hospital and was referred to Buddhachinaraj Pithsanuloke Hospital four hours later. This patient has a history of heavy alcoholic drinking.

The physical finding on admission revealed that he was afebrile with temperature of 37.2°C. His blood pressure was 140/100 mmHg and pulse rate of 150/min. He was drowsy. Neurological examination indicated sign of meningeal irritation. The hematologic examination were:- WBC count 17,700 cells/mm³ with 73% polymorphonuclear cells. CT scan of the brain show no obvious

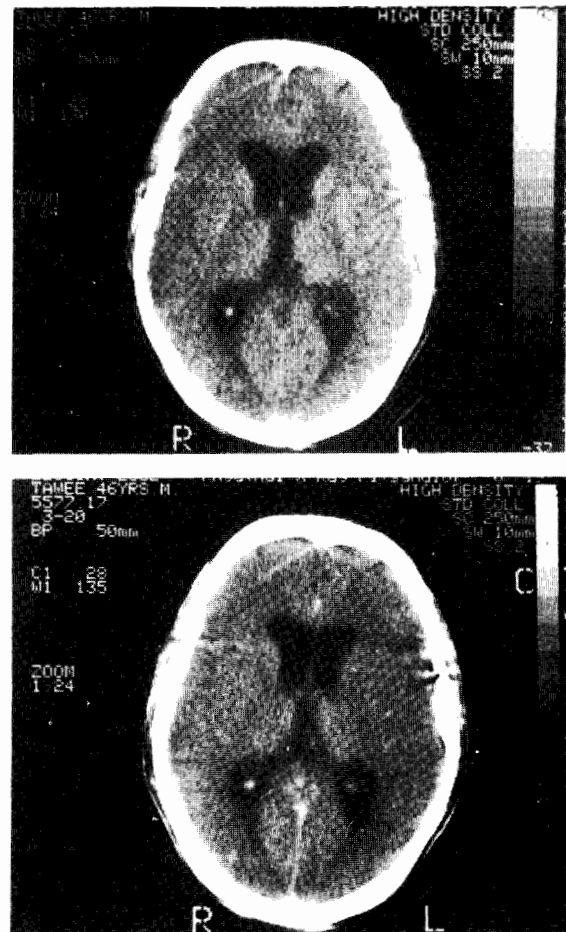


Fig. 1, 2 CT scan (pre and post contrast) showing dilated lateral ventricles.

lesions. The CSF examination showed 10 polymorphonuclear cells with glucose level of 0 mg/dl, (Blood glucose of 147 mg/dl) protein of 97 mg/dl.

L. monocytogenes was obtained from the CSF culture and hemoculture 24 hours later. Treatment with intravenous aqueous penicillin 24 million unit per day resulted in rapid CSF clearing. Three days after admission, the patient developed hospital-acquired pneumonia which required endotracheal intubation and respiratory support. Despite the improvement of meningitis condition with subsequent sterile CSF, the patient's condition deteriorated with progressive pneumonia, respiratory failure and hyponatremia. After twenty-seven days in respiratory care unit, the patient was expired from respiratory failure.

DISCUSSION

In Thailand *L. monocytogenes* infection is a very rare disease. We report here two cases of *L. monocytogenes* infection of the central nervous system. Both

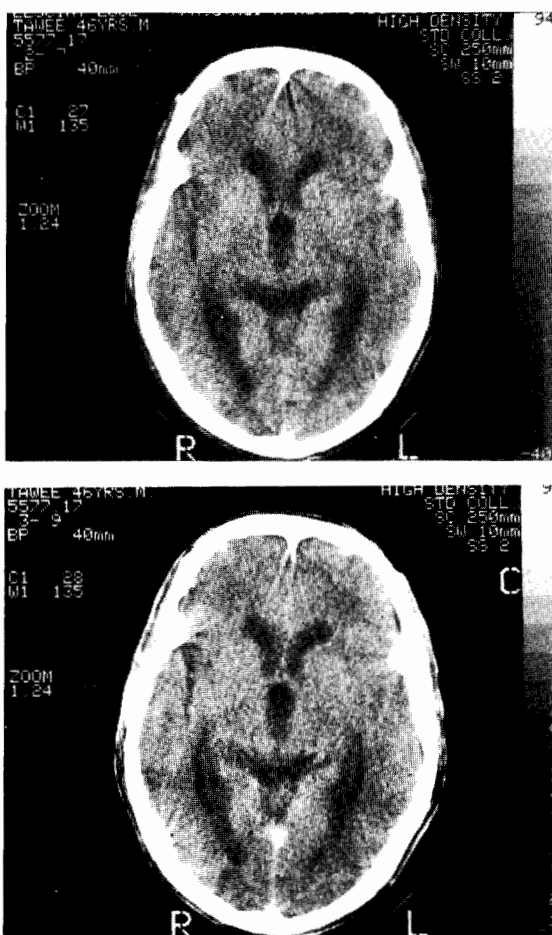


Fig. 3, 4 CT scan (pre and post contrast) showing dilated of 3rd ventricle.

patients demonstrated a wide clinical spectrum of this infection. The first patient presented with symptoms and signs suggestive of chronic increased intracranial pressure, and found to have the obstructive hydrocephalus. Although the CSF contained only few inflammatory cells the hydrocephalus should be a result of the chronic inflammatory process in the subarachnoid space. The clinical presentations of this patients is uncommon in *L. monocytogenes* infection. The second patient presented with a more common clinical presentation of this infection, ie. acute meningitis.

Definite diagnosis of this infection relies on the isolation of the organism from CSF or blood culture.

This requires an awareness, and experience of the microbiology technician. *L. monocytogenes* may be mislabeled as a contaminant because of its resemble diphtheroid organism, especially when the Gram stain shows only rod forms. Sometime it can also be misclassified as the streptococcus if the Gram stain shows only the coccoid organism. The test to observe its motility function on MLT media provides the differentiation of *L. monocytogenes* from other organisms, such as *Corynebacterium* spp., *Erysipelothrix* spp. etc.

The recommended antimicrobial treatment for *L. monocytogenes* infection is a combination of ampicillin and gentamicin. This organism is also sensitive to penicillin, which was able to eradicate this organism in the CSF of both patients in this report.

The epidemiology of *L. monocytogenes* infection is unknown in Thailand. Physicians should be now aware of this infection in patients who present with symptoms and signs of both acute or chronic meningitis.

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