

Prolonged fever, chronic subcutaneous abscess and liver abscesses in a diabetic patient : a case report.

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A case of a Thai male soil-analysis engineering instructor who lived in Bangkok with problems of prolonged fever and chronic subcutaneous abscess is reported. During hospitalization, diabetes mellitus was detected. After surgical drainage of the subcutaneous abscess, he developed jaundice and right upper quadrant pain due to multiple liver abscesses. Melioidosis was later diagnosed and medically treated with a favorable outcome. No complications were found during the treatment.

Key words : *Prolonged fever, Subcutaneous abscess, Liver abscess, Melioidosis.*

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ผู้ป่วยชายไทย อาชีพอาจารย์คณะวิศวกรรมศาสตร์ ด้านวิเคราะห์ดินภูมิลำเนากรุงเทพมหานคร มาโรงพยาบาลด้วยเรื่องใช้ระยะเวลาานาน ฝิไตฝิวหนักร็องร็องที่คอ ระหว่างที่รักษาตัวในโรงพยาบาล ตรวจพบว่าเป็นเบาหวาน ผู้ป่วยได้รับการผ่าตัดระบายหนองฝิไตฝิวหนักร็องที่คอ ต่อมาผู้ป่วยเริ่มมีดีซ่าน และปวดท้องด้านบนขวา จากการสืบค้นเพิ่มเติม พบสาเหตุจากฝิหลายลูกในต้บ การวินิจฉัยในเวลาต่อมาพบว่าผู้ป่วยเป็นโรคเมลิออยโดสิส ผู้ป่วยได้รับการรักษาทางอายุรกรรมจนหายเป็นปกติ ไม่พบภาวะแทรกซ้อนใด ๆ ระหว่างการรักษา

A 54-year old Thai married male patient was admitted to Petcharavej Hospital because of painful, progressively enlarged mass at the left side of the neck for 2 weeks. He had been in good health until one month prior to admission when he noticed a small, slightly painful mass at the left side of neck with occasional fever and chills. He took over-the-counter medication for ten days without clinical improvement and he became more febrile with progressively enlarged and painful mass.

He was born and lived in Bangkok. He had worked as soil analysis instructor at the Faculty of Engineering, Kasembandit University, Bangkok for about ten years.

He did not have any previous history of diabetes mellitus but during the prior 3-4 weeks he had developed polyuria, polydipsia and progressive weakness.

He neither smoked nor consumed alcoholic beverages.

He denied travelling to rural areas during the past twenty years.

Upon physical examination, his temperature was found to be 40.0°C, the pulse rate was 100 per minute, the respiration rate was 20 per minute and the blood pressure was 120/70 mm Hg. The patient was alert and well oriented but looked weak. Neither pallor nor jaundice was detected. There was a firm, tender mass of 3 cm diameter at the left upper posterior cervical area, with warmth and reddening of the overlying skin. Other physical examination results were unremarkable.

Laboratory findings included a hematocrit of 48%, a white blood cell count of 5,900 per

cu.mm. with 80% polymorphonuclear leukocytes and 20% lymphocytes and a platelet count of 250,000 per cu.mm. Other values were fasting blood sugar of 221 mg/dl, blood urea nitrogen of 20 mg/dl and creatinine of 0.8 mg/dl. Urinalysis revealed specific gravity of 1.020, 1+ albuminuria, 2+ glycosuria, WBC 0-1/HPF and RBC 0-1/HPF. A chest radiograph was normal.

After blood cultures were taken, he was treated with cloxacillin given intravenously 4 gm per day and drainage of the abscess at the left side of the neck was done after the blood sugar was well under control. The drainage revealed a thick walled abscess with a large amount of foul smelling pus. Gram staining of the pus demonstrated numerous polymorphonuclear leukocytes with rare small gram-negative bacilli. Pus culture was done, intravenous gentamicin 240 mg per day and oral metronidazole 1.2 gm per day was added.

Three days after admission, he still had high fever. Jaundice and right upper quadrant pain were detected. The liver was not enlarged. A liver function test revealed total bilirubin of 5.6 mg/dl, direct bilirubin of 5.1 mg/dl, aspartate aminotransferase of 75 unit/L(8-40), alanine amino-transferase of 79 unit/L(5-35), and alkaline phosphatase of 534 unit/L (39-117). Ultrasonography of the upper abdomen was done and demonstrated multiple ill-defined, low echogenic masses in the right lobe of the liver which ranged from 1-3.5 cm in diameter. The gall bladder, common bile duct, pancreas, spleen and both kidneys appeared normal.

On the same day, the pus culture grew reported to be *Pseudomonas* species which are

sensitive to amoxicillin-clavulanic acid, ceftazidime, chloramphenicol, ciprofloxacin, cotrimoxazole, imipenem and tetracycline but resistant to amikacin, cephalothin and gentamicin. Melioidosis with subcutaneous abscess at the left side of neck and multiple liver abscesses was provisionally diagnosed and a serum analysis for melioidosis titer was done. The antimicrobials were switched to ceftazidime 6 gms per day given intravenously and cotrimoxazole (80/400) six tablets per day given orally. The fever and jaundice had gradually declined.

The final report of the pus culture (confirmed at Ramathibodi Hospital) yielded of *Pseudomonas pseudomallei*. The melioidosis titer was positive > 1 : 10,240 but hemocultures were sterile.

After one week of antimicrobial treatment he became afebrile and anicteric. A repeated liver function test revealed total bilirubin of 1.5 mg/dl, direct bilirubin of 0.7 mg/dl, aspartate aminotransferase of 41 unit/L, alanine aminotransferase of 50 unit/L and alkaline phosphatase of 448 unit/L. The ceftazidime was stopped and oral doxycycline at 200 mgs per day was started along with cotrimoxazole in the same dose. He was discharged from the hospital on day 17. After three months later at follow-up the melioidosis titer declined to 1:1,260. A repeated ultrasonography of the hepatobiliary system was normal and his clinical status was much improved. The doxycycline alone was continued for another three months without any relapse.

Discussion

This was a case of melioidosis presented

with prolonged fever, a subcutaneous neck abscess and multiple liver abscesses. Clues to diagnosis in this case were:

1. A history of prolonged fever and a chronic subcutaneous abscess
2. Multiple liver abscesses
3. Gram stain of pus from the subcutaneous abscess revealed numerous inflamed cells but only rare gram-negative bacilli, and no gram-positive bacteria were found.
4. The pus culture was initially reported to be *Pseudomonas* spp and was subsequently confirmed to be *Pseudomonas pseudomallei*

Melioidosis is a tropical infectious disease caused by *Pseudomonas pseudomallei* (*P. pseudomallei*) which is a small obligatory aerobic, motile, non-spore forming and poorly stained gram-negative bacilli. It has the characteristic shape of a "safety pin" with bipolar staining on culture media due to its irregular staining. *P. pseudomallei* is a free-living bacteria found widely in the soil and surface water of rice paddies, fields newly planted with palm oil, storm drains, gardens and playgrounds in an endemic. In humans, melioidosis is transmitted mainly by contamination with infected soil or water through a preexisting skin abrasion or ulcer, or by inhalation of infectious dust particles. Rarely, it can be transmitted by ingestion of contaminated food or water or by sexual contact.⁽¹⁾ In Thailand, *P. pseudomallei* has been isolated from samples of surface soil and deep fresh water mainly in the south and northeast, occasionally in the central and north regions but not previously from Bangkok and nearby areas.^(2,3) Therefore, distribution of *P. pseudomallei* is uneven throughout Thailand. Bangkok and

the nearby provinces in the central region are generally believed to be free of this pathogen.^(3,4) Most patients with this illness reported from hospitals in Bangkok had lived in the northeast or the south. This patient lived in Bangkok and had no history of travel to the northeast or the south during the previous twenty years. So there is a question of how he obtained this organism. Hypothetically there are two explanations. Firstly, it may have been due to the long incubation period of melioidosis (up to 26 years has been reported)⁽¹⁾ or reactivation of a chronic dormant infection. Another hypothesis is that he got the organism from soil in the university during his teaching work. If the latter is true, it means that *P. pseudomallei* can be found in Bangkok, but, possibly, due to lack of some unknown contributing factor (which may be found in the south and the northeast) the pathogen cannot be transmitted to humans.

The spectrum of melioidosis in humans varies from the subclinical to overwhelming manifestations resembling other acute and chronic bacterial infections. Thus melioidosis has been termed "the great imitator" of other infectious diseases, as virtually every organ can be affected. Its chronic form has been mistaken for anaerobic, tuberculous or fungal infections. Also, its pyogenic form may be confused with staphylococcal infections or other pyogenic bacterial infections.⁽⁴⁾ Our case was presented with chronic subcutaneous abscess that was initially mistaken for staphylococcal infection. After drainage of the abscess it was again misdiagnosed as an anaerobic and other gram-negative infection due to its foul smell and numerous polymorpho-

nuclear leukocytes eventhough there were very few gram-negative bacilli seen microscopically. Leelarasamee and Bovornkitti reviewed melioidosis in Thailand and found that *P. pseudomallei* should be strongly suspected when gram-positive cocci in clusters (*staphylococcus aureus*), a mixture of gram-positive and gram-negative cocci and bacilli (anaerobes) or gram-negative bacilli consistent with enterobacteriaceae are not found in the smear of pus from suppurative lesions⁽⁵⁾, as in this patient.

The definite diagnosis of melioidosis in this case is made by positive *P. pseudomallei* from culture of pus drained from subcutaneous abscess. It was initially reported to be *Pseudomonas* spp. This is similar to many earlier studies in Thailand in which *Pseudomonas* spp. (especially *P. cepacia* and *P. stutzeri* which are usually contaminant bacteria) and non-fermentative gram-negative bacilli are often reported when *P. pseudomallei* is actually present.⁽²⁾ The clinical significance of this misidentification is often disregarded by microbiologists and physician unfamiliar with the pathogen. Therefore, proper specimen collection, suspicion of this pathogen by clinical clues, and good communication between physicians and microbiologists are all crucial for a correct and rapid diagnosis of melioidosis.

Melioidosis patients usually have an underlying illness which may include diabetes mellitus, cirrhosis, chronic renal failure, systemic lupus erythematosus, or thalassemia.^(6,8) Diabetes mellitus was reported to be an important underlying illness in melioidosis with prevalence varying from 20-40%.⁽⁶⁻⁹⁾ In this patient, diabetes

mellitus was initially diagnosed during this illness.

This patient responded to treatment with ceftazidime and cotrimoxazole without drainage of the liver abscesses. Vatchara Preechasakul and colleagues studied 34 cases of *P. pseudomallei* liver abscesses. They found that 82% had multiple liver abscesses and 56% also had splenic abscesses. Treatment included antimicrobials alone, antimicrobials plus needle aspiration and antimicrobials plus opening and drainage of the abscesses. The overall mortality rate was 26%. Most patients were treated medically with antimicrobials alone because of the small and multiple liver abscesses.⁽¹⁰⁾ Leelarasamee and Bovornkitti suggested that surgical drainage should be performed only after the institution of proper antimicrobial therapy because, in their experience, more than 10% of the patients with liver abscesses suddenly developed septicemia and died a few days after needle aspiration. They hypothesized that this phenomenon may be due to the sudden change from an anaerobic to an aerobic cavity. *P. pseudomallei*, which is an obligatory aerobe and is present in small numbers in a closed abscess, can rapidly multiply under favorable new conditions and thus cause bacteremia leading to fulminant septicemia.⁽⁵⁾ But in the study of Vatcharapreechasakul and colleagues, none of their patients developed septicemia after aspiration of the liver abscesses.⁽¹⁰⁾ This unequivocal correlation needs further confirmation by clinical studies and experiments in animals.

Melioidosis, "the great imitator", should always be suspected in a case of prolonged fever with chronic suppurative lesions which do not

respond to usual antimicrobials, especially if there is a history or finding of diabetes mellitus, even though the patient lives in Bangkok and there is no recent history of travel to other provinces. The microbiological characteristics and the communication between physicians and microbiologists are also essential for early diagnosis and prompt treatment of melioidosis in order to decrease the morbidity and mortality of the patient.

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