

Clostridium tertium Septicemia : A Case Report

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Abstract

A patient was admitted in Siriraj Hospital for TOCE (transhepatic chemo-oily embolization). He was diagnosed as having hepatoma on top of cirrhosis. The day after TOCE, he developed fever which persisted for 7 days. *Clostridium tertium* was recovered from 3 blood cultures. This report intended to alert the physicians and microbiologists to aware of *C. tertium* which is rarely reported anaerobe capable of growing in aerobic environment. (*J Infect Dis Antimicrob Agents* 1994;11:125-7.)

Key words : *Clostridium tertium*, septicemia

เรื่องย่อ

รายงานผู้ป่วยเสีพิคซีเมียจากเชื้อ *Clostridium tertium* หนึ่งราย

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รายงานผู้ป่วยซึ่งเป็นตบแข็งและมะเร็งตบหนึ่งรายที่มาโรงพยาบาลศิริราชเพื่อทำ TOCE (transhepatic chemo-oily embolization) หลังจากได้รับการทำ TOCE แล้ว วันรุ่งขึ้นผู้ป่วยเริ่มมีไข้ขึ้น และมีอาการไข้ขึ้น ๆ ลง ๆ เป็นเวลานาน 7 วัน การวินิจฉัยว่าเป็นเสีพิคซีเมียจากเชื้อ *Clostridium tertium* ได้มาจากการเพาะหาเชื้อแบคทีเรียก่อโรคจากเลือดของผู้ป่วยแล้วพบว่า เพาะได้เชื้อดังกล่าวทั้ง 3 ขวด รายงานนี้มุ่งหวังให้แพทย์และนักจุลชีววิทยาคำนึงถึงเชื้อแอนแอโรบส์ชนิดนี้ด้วยเมื่อเพาะหาเชื้อแบคทีเรียก่อโรคจากเลือดของผู้ป่วย เนื่องจากเป็นเชื้อแอนแอโรบส์ที่สามารถเจริญเติบโตได้ในบรรยากาศที่มีออกซิเจนตามปกติและไม่ค่อยมีรายงานถึงเชื้อชนิดนี้ที่ก่อโรคในผู้ป่วย (วารสารโรคติดเชื้อและยาด้านจุลชีพ 2537;11:125-7.)

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INTRODUCTION

Clostridium tertium is aerotolerant rather than strictly anaerobic, but spores are formed only under anaerobic conditions. It may grow on aerobic blood agar plate. It was first described in cultures from war wounds and subsequently from gas gangrene and a brain abscess. Additional isolates have been made from ascitic fluid in spontaneous bacterial peritonitis and from intra-

abdominal abscess or pleural fluid from neutropenic patients. The organism is found as part of the normal flora of the gastrointestinal tract. Therefore, it is also present in feces and soil (1-5).

Isolation of *C. tertium* from blood culture has been rarely reported. We are presenting one case in which this organism was cultured from 3 blood samples.

CASE REPORT

A 64-year-old man was admitted in Siriraj Hospital on April 8, 1991 for TOCE (transhepatic chemo-oily

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embolization). He had hepatoma on top of cirrhosis diagnosed by ultra sound technique, percutaneous liver biopsy and peritoneoscopy.

Physical examination on admission revealed the body temperature of 37°C, pulse rate 80/min, respiratory rate 16/min, blood pressure 140/80 mmHg, good consciousness, mild anemia, no jaundice, mild pitting edema both legs, normal heart and lungs, liver 2 F.B. below right costal margin and other no abnormal finding. The initial laboratory findings included 30.8% haematocrit, white cell count of 5,600/mm³; 31% lymphocytes, 1% monocytes, 4% eosinophils, 1% basophils, and 63% neutrophils; and adequate platelet count.

The patient was performed TOCE on April 17, 1991. On the next day, he developed fever. On April 19, 1991 a doctor prescribed ampicillin 500 mg tid ac & hs. On April 20, 1991 blood culture, clean-voided midstream urine culture, ascitic fluid culture and complete blood count were performed. The results were as follows: *C. tertium* was isolated from blood culture 3/3 specimens; clean-voided, midstream urine culture revealed no growth; ascitic fluid revealed negative for *Mycobacterium* sp.; complete blood count revealed 32% haematocrit, white cell count of 6,400/mm³; with differential count of 80% lymphocytes and 20% neutrophils. The duration of intermittent fever was 7 days.

Microbiological study. The organism was gram-positive straight rod 1 × 3–4 μm in size. The colony on blood agar upon aerobic incubation was small (1 mm in diameter), circular, transparent, colorless, with no zone of hemolysis. The motility test was positive. The catalase, oxidase and DNase tests were negative. The organism could not grow on nutrient agar or in peptone water. The identification by using various biochemical tests did not match the organism with any aerobic or facultative bacteria. Upon consultation with Dr. Elizabeth Shaw, Chief-consultant microbiologist at the Royal London Hospital, University of London, the organism was referred to NCTC (National Collection of Type Cultures, United Kingdom). The organism was then forwarded to PHLS Anaerobe Reference Unit, Public Health Laboratory, University Hospital of Wales, Health Park, Cardiff, United Kingdom). Finally, the results at PHLS Anaerobe Reference unit confirmed the organism to be *C. tertium*.

DISCUSSION

Bacteremia due to Clostridial species accounts for 0.9% of isolates from clinically significant cultures of blood and *C. perfringens* is the commonest species recovered. Isolation of *C. tertium* from blood culture is rare. It may be possible that the organism is reported as an aerobic bacillus since it can grow to a limited extent aerobically or is misinterpreted as being a mixture of a *Bacillus* sp. with an unspiciated anaerobe showing metronidazole susceptibility (6-11). The reason why *C. tertium* can grow in air may be related to its content of superoxide dismutase enzyme (2).

In this case report, the patient developed an intermittent fever for 7 days beginning from the day after receiving TOCE and all 3/3 blood specimens were positive for *C. tertium*. We are concerned whether the positive blood culture for *C. tertium* represents just a transient bacteremia or a true septicemia. However the blood cultures were taken 30 minutes apart. This should exclude transient bacteremia. It is likely that the source of septicemia was due to this organism.

C. tertium has been characterized as being a nontoxin-producing bacteria. This will account for the absence of intravascular hemolysis, hemoglobinemia, hemoglobinuria and jaundice that characterizes septicemias due to the toxin producer such as *C. perfringens* (5).

The high blood-lymphocyte count is usually associated with mycobacterial or fungal infections whereas the high blood-PMN count is associated with most other bacterial diseases. The patient in this case report had the high blood-lymphocyte count. However, the culture result of ascitic fluid was negative for *Mycobacterium* sp. Thus the mycobacterial infection was unconfirmed. It may be possible that this patient is an immunocompromised host because he had hepatoma on top of cirrhosis. Therefore, the immune response to bacterial infection is different from healthy persons. Furthermore, there are reports concerning *C. tertium* septicemia in patients with neutropenia (1) and *C. septicum* infection in patients with agranulocytosis (9). In our case, the patient had lymphocytosis.

The source of *C. tertium* infection is mostly endogenous since the organism is found as part of the normal flora of the gastro-intestinal tract. However, the source is rarely exogenous. The organism has been reported in ward environments and unused, commercially available incontinence pads in British hospitals (10).

The epidemiologic work up to find the source in our case was not taken. It may be possible that the organism originally located in gastro-intestinal tract was introduced into blood during TOCE procedure.

The clinical outcome of the patient was good after ampicillin 500 mg was given four times a day for 10 days. The fever subsided and he was discharged later with improved condition. The length of stay in hospital was 21 days.

This report intended to alert the physicians and microbiologists to aware of *C. tertium* which is a rare anaerobe capable of growing in air so it is easily misidentified and there are only few reports concerning this organism.

SUMMARY

A case is presented in 64-year-old man admitted in Siriraj Hospital for TOCE (transhepatic chemo-oily embolization). After he had TOCE, he developed fever and *Clostridium tertium* was cultured from all 3/3 blood specimens.

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