

Hepatic actinomycosis abscess in a 5 year old boy.

Darunee Boonjunwetwat*

Sanun Rungruxsirivorn** Kiat Arjhansiri*

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Actinomycosis is a rare infectious disease caused by Actinomyces israelii, which is a common saprophyte found in the oral cavity, respiratory tract and gastrointestinal tract. The infection is usually precipitated by some underlying conditions such as poor mouth hygiene, tooth extraction, oral trauma, following operation, perforated appendicitis, diverticulitis, cholecystitis, diabetes mellitus, and prolong steroid consuming. The diagnosis is usually delayed, consequently the treatment is unsuccessful. This report presents a five year old boy with hepatic actinomycosis. The diagnosis was made by operative and pathologic findings. The ultrasound and CT scan showed a complex mass in the liver. The differential diagnosis is discussed. Laboratory findings of leukocytosis, and elevation of gamma globulin and alkaline phosphatase, including the history of chronic illness may be helpful in the awareness of the infection.

Reprint request : Boonjunwetwat D, Department of Radiology, Faculty of Medicine, Bangkok 10500, Thailand.

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* Department of Radiology, Faculty of Medicine, Chulalongkorn University.

** Department of Pathology, Faculty of Medicine, Chulalongkorn University.

ครุณี บุญยืนเวทวัฒน์, สนั่น รั้งรักษ์ศิริวร, เกียรติ อาจหาญศิริ. ลักษณะภาพอัลตราซาวด์ของฝีในตับจากเชื้อแอกติโนมัยโคสิสในผู้ป่วยเด็กอายุ 5 ปี จุฬาลงกรณ์เวชสาร 2532 กุมภาพันธ์; 33(2): 133-138

Actinomycosis เป็นโรคติดเชื้อที่พบได้น้อยมาก เชื้อที่ทำให้เกิดพยาธิสภาพในมนุษย์ได้แก่ *Actinomyces israelii* พยาธิสภาพที่พบส่วนใหญ่จะอยู่ในช่องปาก คอ และหน้า จะพบเป็นส่วนน้อยในช่องท้องและปอด การติดเชื้อมักจะพบร่วมกับโรคอื่น ๆ ได้แก่ โรคในช่องปาก ฟันผุ ภาวะหลังผ่าตัดช่องท้อง ลำไส้ทะลุ ถุงน้ำดีอักเสบ ลำไส้ติ่งอักเสบ ลำไส้อักเสบจากเยื่อぶโป่งพอง (*diverticulitis*) อุบัติเหตุ เบาหวาน หรือการไต่ยาสเต็มยารอยด์ เป็นระยะเวลานาน การวินิจฉัยโรคมักทำได้ยาก ทำให้การรักษาโรคล่าช้า รายงานนี้ได้เสนอผู้ป่วย เด็กชาย อายุ 5 ปี ซึ่งมีอาการปวดท้องด้านขวามาเรื้อรัง ตรวจร่างกายพบตับโต ผลการตรวจอัลตราซาวด์และสแกนของตับ พบมีก้อนในตับกลีบขวา ได้รับการผ่าตัดผลทางพยาธิพบเป็นฝีเกิดจากเชื้อ *Actinomyces* การวินิจฉัยโรคในผู้ป่วยที่เป็น *Actinomycosis* ของตับ จากการตรวจด้วยอัลตราซาวด์ และ CT scan มักจะพบเป็นก้อนในตับซึ่งไม่มีลักษณะเฉพาะเจาะจงที่จะบ่งชี้ว่าเป็น *Actinomycosis* ก้อนที่พบมีลักษณะเป็น *Solid mass* ผู้ป่วยที่เป็นโรคนี้อาจมีอาการเรื้อรัง โดยไม่สามารถให้การวินิจฉัยโรคได้ การตรวจผลเลือดที่พบความผิดปกติ คือ โลหิตจาง เม็ดเลือดสูง ค่า *gamma globulin* และ *alkaline phosphatase* สูง ซึ่งช่วยบ่งชี้ถึงโรคนี้นำไปสู่การวินิจฉัยโรคที่ถูกต้องได้

Actinomycosis of liver is a rare infectious disease.^(3,5,10,15) It is usually diagnosed in the late stage, mostly post-operatively.⁽⁹⁾ Many reports suggest that actinomycosis is never a primary infection and always complicates another disease.^(3,11) Predisposing factors include gastrointestinal perforation, appendicitis, diverticulitis, trauma, diabetes mellitus, steroid therapy, poor dental hygiene.^(3,4,14) Infection associated with intrauterine device have been reported.^(4,11) The infection is commonly found in the mouth, face and neck, less commonly in the abdomen, and rarely in the lung.^(2,3,8,12) We report one case of actinomycosis involving the liver in a five year old boy. The diagnosis was made at operation and histologically proved.

Case report

A five year old boy was admitted with a clinically palpable enlarged liver. He had 8 months history of right upper quadrant pain. There was no fever or jaundice. Three months before admission, his parents noticed that his abdomen was progressively distended. Physical examination revealed enlarged liver 5 cm below right costal margin. The spleen was not enlarged. The body temperature was 37°C.

Laboratory findings:

Hemoglobin 10 gm %, WBC 26,800/mm³, neutrophils 58 %, lymphocytes 30%, eosinophils 6 %, basophils 1 %, monocytes 5 %. Total bilirubin 1.6

gm % (0.3 - 1.2), direct bilirubin 0.3 gm % (0-0.4), SGOT 31 unit/1 (up to 38), SGPT 5 unit/1 (up to 38), AP 75 unit/1 (9-35), alphafetoprotein negative, protein 100 gm %, albumin 3.9 gm % (3.4-5.5), globulin 6.1 gm % (2.0-4.0).

The abnormal laboratory results showed anemia, leukocytosis, elevation of serum globulin and alkaline phosphatase levels. Liver scan showed hepatomegaly with a large space occupying lesion in the lateral aspect of the right lobe. Liver ultrasonography was performed. The ultrasonographic feature showed a solid mass in the lateral aspect of right lobe, contiguous to the liver capsule and the right dome of the diaphragm. The echogenic pattern of the mass revealed inhomogeneous mixed high and low echoes. (Fig. 1A) The gall bladder wall was thickened. (Fig. 1B) There was no gall stone. The most likely diagnosis was hepatoblastoma. Differential diagnosis included hemangioma, hamatoma, and metastasis. Surgical explore was performed. The operative findings were analyzed. A solid mass was found in the right lobe of the live with massive adhesion. Right hepatectomy was done. The right pleura, pylorus and hepatic flexor were accidentally torn with massive bleeding. The child was treated with whole blood and fresh frozen plasma ransfusion. The post operative course was uneventful. Hypovolemic shock, jaundice and upper gastrointestinal tract bleeding developed and progressed to acute renal failure; the patient expired four days later.

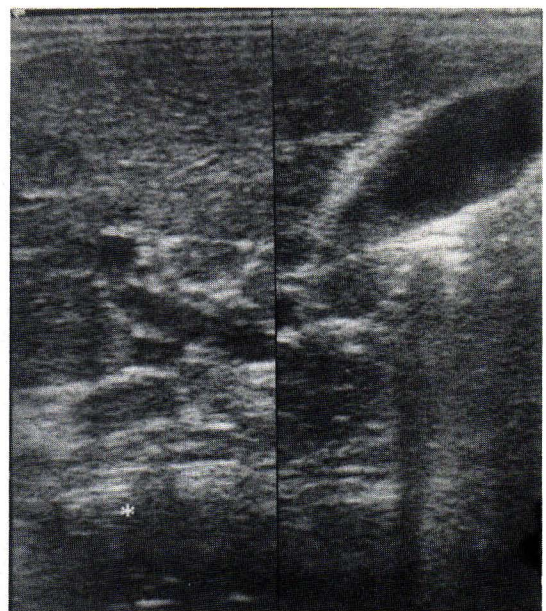
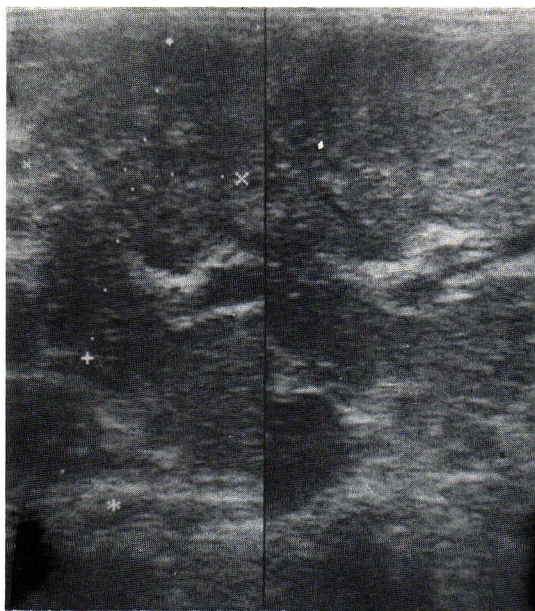


Figure 1A, B. Ultrasonogram showed an inhomogeneous mixed high and low echoic mass in right lobe liver without posterior enhancement. The gall bladder wall was thickened.

The right hepatectomized specimen was measured $15 \times 3.5 \times 3.0 \text{ cm}^3$ was located at the inferior border near the gall bladder. Sectioning of the liver revealed a $8 \times 5 \text{ cm}^2$ white yellow ill defined cut surface.

Microscopic feature.

The sections of the liver tissue showed diffuse chronic and acute inflammation intermingled with fibrosis and multiple abscesses; (Fig. 2,3) a few granulomas were

also presented. The area of inflammation composed of neutrophils, plasma cells, foamy histiocytes and lymphocytes with vascular dilatation. Some abscess contained clump of organisms arranged in ray-like appearance with fine granules, (Fig. 4,5). Special staining of the tissue sections were made and revealed branching nonseptate hyphae on Glomeri methanamine silver (GMS) gram stain was positive and acid fast stain was negative. The findings were suggestive of actinomycotic infection of the liver.

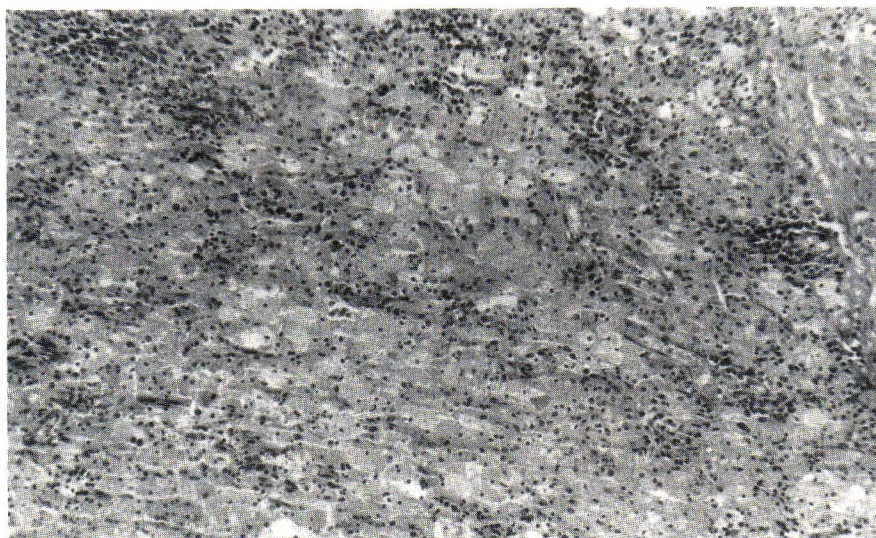


Figure 2. The microscopic section of the liver showed an area of chronic inflammation which was infiltrated by foamy histiocytes and lymphocytes predominantly. (M & E $\times 100$)

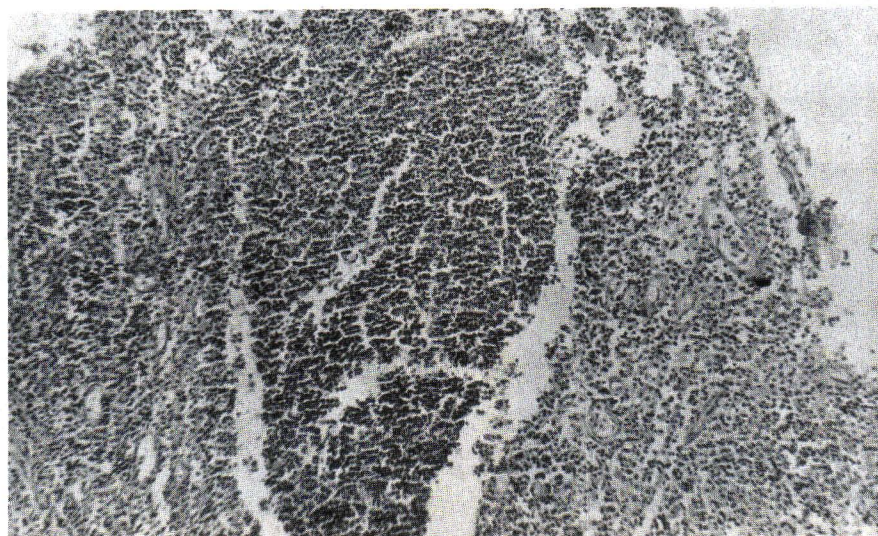


Figure 3. The section showed an area of abscess in the liver. (M & E $\times 100$)

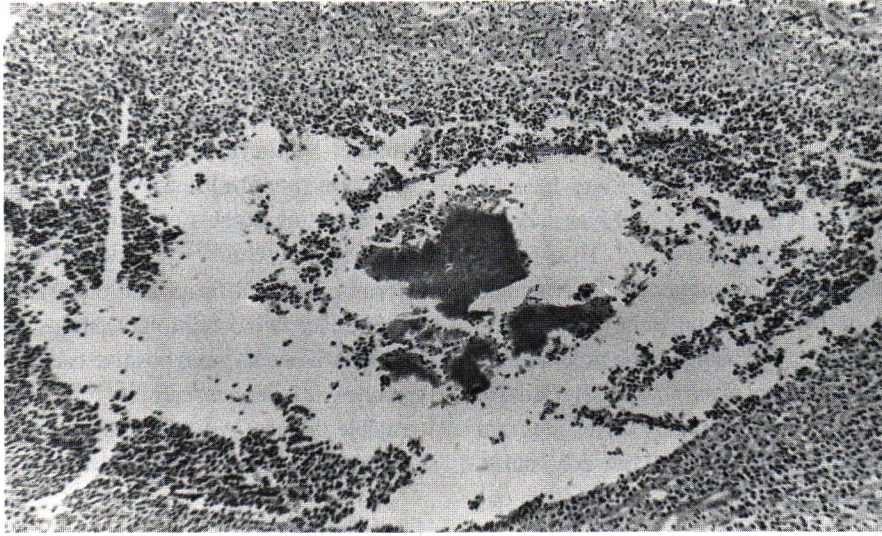


Figure 4. The section showed clump of organisms in the area of abscess. (M & E \times 40)

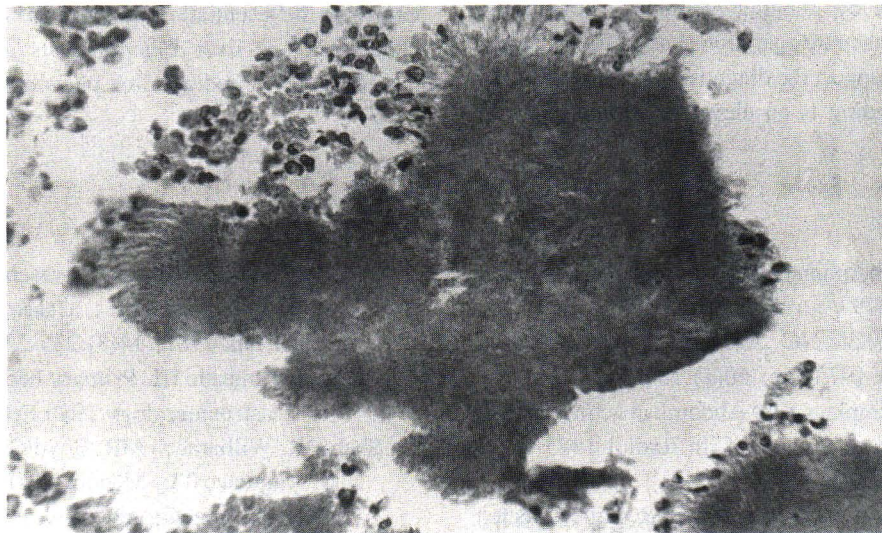


Figure 5. Higher magnification of the organisms revealed ray-like arrangement with fine granules.

Discussion

Actinomycosis is an anaerobic gram positive branching filamentous bacterium. The infective agent in human is caused by *Actinomyces Israelii*.^(1,2,3,4,14) It is a common saprophyte found in the oral cavity, respiratory tract and gastrointestinal tract. The organisms usually lodge in the tonsils, tooth pockets and oropharyngeal crypts.^(2,3,4,12) In the abdomen, ileocecal area is the common site.^(2,3,4,8) When the mucosa is destroyed by disease or trauma, the organisms penetrate into adjacent

tissue and become pathogenic. Consequently, the infection is often precipitated by tooth extraction, oral trauma, mandibular fracture, following operation, perforation, appendicitis, diverticulitis, cholecystitis.^(1,8,9,11,14) Infection in pelvic organ is always associated with intrauterine device.^(9,11) The route of spreading is by direct extension, blood stream or portal vein.^(4,5,10) The organisms produce proteolytic enzyme causing granulation lesion or abscess.^(6,10,15) Most instances occur in adolescents and middle age group.^(1,11) Male are more frequently infected

than female.^(1,6,11) The course of the disease is a chronic progressive inflammatory process. It is a most commonly misdiagnosed disease.^(1,4,9) There is no certain feature described in literatures. Frequent symptoms are pyrexia, weight loss, nausea, vomiting, and persisting pain. Sinus tracks, fistulae or mass are often associated.^(2,3,9,14) The most common organ involvement is head and face.^(6,8) Abdominal actinomycosis is found in 15 %. Liver involvement is found in 5 % of all cases.^(10,11) This report presents a case of hepatic actinomycosis. It spreaded by direct invasion or by the portal vein.^(2,4,5,6,10) The common feature was abscess formation. The preoperative diagnosis was difficult. There was no specific feature found in the imaging investigations. Ultrasonogram showed a mixed inhomogeneous high and low echo mass, often misinterpreted as solid mass.⁽¹¹⁾ Computed tomography revealed an inhomogeneous enhanced density mass or a low density mass with an internal honeycomb structure.^(4,11) Angiography showed a hypervascular mass which could be found in the hepatoma or inflammatory mass.^(7,11) Liver scan showed a space occupying lesion in the liver.⁽¹³⁾ It is impossible to differentiate actinomycosis from hepatoma by imaging methods. The specific diagnosis is often made by operation. Laboratory findings may be helpful to support the diagnosis. The most significant laboratory finding is an elevated gamma globulin

level.^(5,9,15) This may result from either fibrosis of actinomycoma itself or inflammatory reactions seen in Glisson's capsules of adjacent liver disease.⁽¹⁵⁾ The SGOT, SGPT levels are usually within normal limits.⁽¹⁵⁾ Serum alkaline phosphatase level shows elevation.^(5,9,15) Anemia, leukocytosis and accelerated erythrocyte sedimentation rate are found.^(2,6,9,15) The serologic precipitation test using antigen extracted from actinomyces is reported to be useful.⁽¹⁵⁾ The definite diagnosis is made by microscopic identification of the organism in the culture under anaerobic condition. Demonstration of branching mycelial filaments gram positive bacilli or forming sulphur granules is characteristic.^(1,2,4,5,6,11) Actinomycosis is a treatable disease. All cases respond to penicillin.^(2,3,5,6,8,11) Combined surgical drainage and excision are helpful.^(2,5)

Conclusion

A five year old boy with hepatic actinomycosis is presented. The clinical course revealed a chronic illness with right upper quadrant pain and hepatomegaly. Since abscess formation is usually found. Ultrasound is useful to demonstrate the mass in the liver. There is no specific feature to differentiate hepatoma from actinomycosis. Abnormality in liver function tests included elevated gamma globulin and alkaline phosphatase level.

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