

PULMONARY HYDATID (ECHINOCOCCIC) CYST

REPORT OF NATIVE CASE*

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HYDATID DISEASE OF THE LUNG fortunately remains relatively unusual in the United States. It is endemic and very common in sheep raising countries, such as Argentina, New Zealand, Iceland, Australia, Italy and Greece, which are relatively near with modern transportation. Haight⁵ and Alexander reviewed the reported cases in the United States and Canada in 1940 and found only 44 instances of hydatid disease involving the lungs or pleura. They reported two personal cases, making a total of 46 North American cases. Of these, five had been born in the United States and only two had never been out of this country.

The following cases of echinococcus invasion of the lung in a patient who has never been out of the central part of Mississippi is of sufficient interest and rarity to warrant recording:

CASE REPORT

C. R., B. H. 50-12642, 25-year-old colored female resident of central Mississippi, took the longest trip of her life when she went 90 miles to a Public Health Center for the treatment of early latent lues. Routine chest film there revealed an intrathoracic mass. This lesion was entirely asymptomatic, with no pain, discomfort, cough, or hemoptysis. She did present a 15-pound weight loss in spite of an increase in appetite and had noted increasing nervousness and palpitation for 2 months. She had contact with numerous mongrel dogs during her childhood. Physical examination revealed a labile pulse averaging 110 per minute with a blood pressure of 150/85. The thyroid was diffusely enlarged to 3 times its normal size. There was a grade II blowing systolic murmur over the

mitral area which was transmitted to the axilla. PA and left lateral chest films revealed a well circumscribed rounded mass of homogenous density located posteriorly near the apex of the left upper lobe (Fig. 1). The mass measured 4 x 5 cm.; the hilar nodes presented minimal calcification. There was an eosinophilia of 4 per cent.

Clinical impression was (1) diffuse toxic goiter and (2) indeterminate lesion of the left upper lobe. The most likely diagnosis seemed to be tuberculoma, but other possibilities including chronic lung abscess, large adenoma, bronchogenic carcinoma, hamartoma, etc. were considered. After preparation with propyl thiouracil and Lugol's, radical subtotal thyroidectomy was done with quick recovery. Exploratory thoracotomy 5 days later revealed a well circumscribed, cystic mass about the size of a lemon in the apico-posterior division of the left upper lobe. Resection of the apico-posterior segment was easily effected after isolating and dividing the appropriate bronchovascular structures. Convalescence was entirely smooth, with rapid re-expansion of the lung.

Pathologic Report (Dr. F. G. Bratley): When the resected segment was opened, it presented a unilocular cystic cavity measuring 4 cm. in diameter. The cyst contained watery fluid and was lined by a thin, translucent membrane which was pale pink in color. This membrane stripped easily from the wall of the cyst and was dislodged as it was opened (Fig. 2). Numerous scolices, many of which presented hooklets, were found in the alveoli immediately adjacent to the cyst. The morphology of the scolices was typical of echinococcus granulosus. It was likely that the scolices became lodged in the alveoli during the operative manipulation, as there was complete absence of inflammatory cellular infiltration about them.

Pathologic Diagnosis: Echinococcus cyst of left upper lobe of lung.

DISCUSSION

The adult echinococcus granulosus is the smallest of the tapeworms, consisting of

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four segments and measuring about 5 mm. in length. It lives in the small bowel of dogs and other definitive hosts, discharging eggs from the terminal segment which are evacuated with the feces. By contaminated water and fresh vegetables the eggs enter the intestinal tract of intermediate hosts, including man, sheep, and cattle. The eggs

capsules develop from the inner germinal layer, producing great numbers of scolices or "hydatid sand." The usual cyst is unilocular and well encapsulated by the adventitia of the host. Rarely, the insulating capsule is incomplete and metastasis may occur.

Hydatid disease of the lung is serious, for rupture of the cyst with escape of its con-

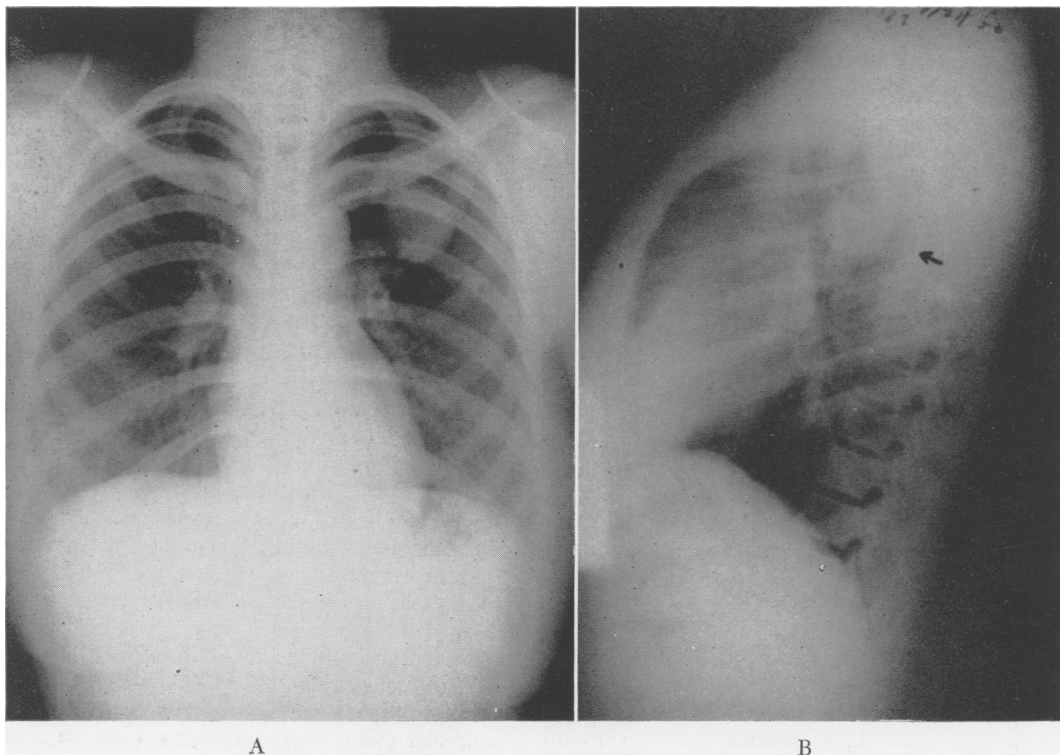


FIG. 1.—PA and lateral chest films showing a well circumscribed, homogenous mass about 4 cm. in diameter in left upper lobe.

hatch in the duodenum, producing oncospheres which migrate through the intestinal wall into the portal circulation. The parasites are usually filtered out in the liver; approximately 75 per cent of all human infections are located in this organ. Some pass through the liver into the pulmonary circulation and come to reside in the lung, where 10 per cent of human hydatid disease occurs. The embryos continue to grow and develop into cysts presenting an inner nucleated germinal layer (endocyst) and an outer laminated covering (ectocyst). Brood

tents may produce dangerous allergic or anaphylactic reactions. When scolices escape from the primary cyst, the development of secondary cysts is not unusual (secondary hydatidosis). Echinococcal cysts of the lung are prone to become secondarily infected, adding the dangers of pulmonary suppuration to the consequences of the original disease.

Because of its rarity in this country, the condition is usually not considered seriously in differential diagnosis. The roentgenogram in hydatid disease of the lung usually

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shows a single, but occasionally multiple, well-circumscribed shadow of homogenous density which may be located near the hilum of the lung or more peripherally. Eosinophilia should suggest the possibility of parasitic infection. The Casoni intradermal and the Weinberg complement-fixation tests are valuable diagnostic technics, but it is

surgical procedure of choice. External drainage through an area of pleural symphysis has been more frequently used in the past. To minimize pleural contamination, a two-stage procedure has often been advocated. Marsupialization, whereby the cyst membranes and contents are carefully evacuated and the lung sutured to the chest wall

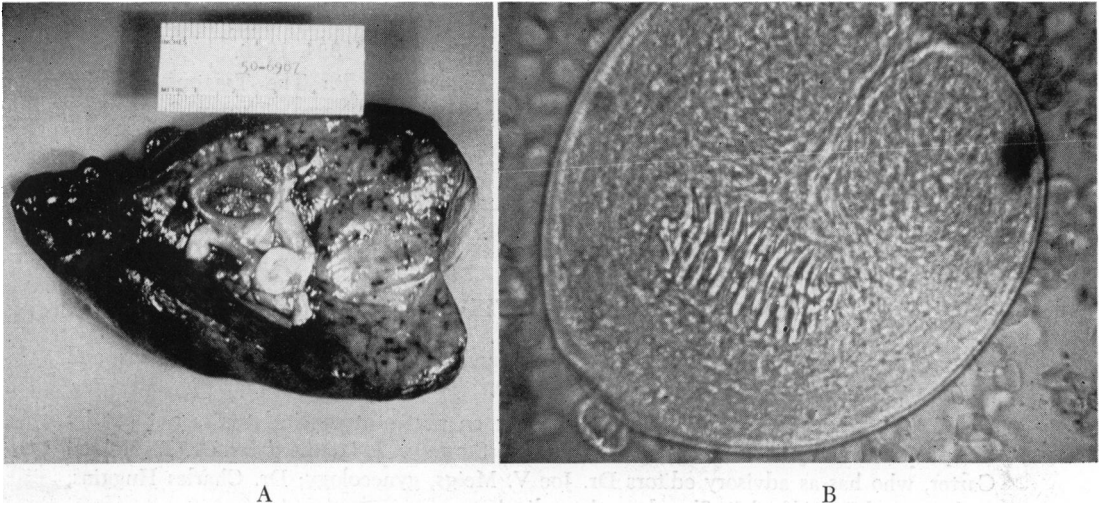


FIG. 2.—(A) Opened unilocular hydatid cyst. The translucent membrane lining the cyst has been partially stripped from the adventitia. (B) Typical scolex with hooklets invaginated into cyst membrane.

frequently difficult to get fresh antigen for these tests in non-endemic areas. Diagnostic aspiration invites anaphylactic shocks; its use is strongly condemned.

TREATMENT

There is no medical treatment; the only effective therapeutic measure is surgical removal. An occasional spontaneous cure of pulmonary hydatid disease from rupture and expectoration of the cyst and its contents occurs. Waiting for spontaneous evacuation is dangerous practice and invites progression of the disease, secondary infection, and death from aspiration or anaphylaxis. Rupture into the great vessels or pericardium may occur.

There is not complete agreement among the surgeons of endemic areas as to the

for external drainage, has been successfully employed. More recently, the cysts have been carefully evacuated of fluid and lining membranes and the defect in the lung closed by carefully suturing the adventitia.^{2, 8} Pleural drainage with an intercostal catheter is necessary to avoid tension pneumothorax and to aid in early full expansion of the lung.

With increasing safety of pulmonary resection, lobectomy and segmental resection are being used more commonly as definitive therapy. Excisional surgery materially shortens the convalescence and avoids many of the complications associated with older procedures, such as external drainage and marsupialization. It is the treatment of choice for large single hydatid cysts of the lung,⁶ especially when the surrounding ad-

ventitia is tough and there is associated bronchiectasis or pulmonary suppuration.¹

SUMMARY

A native case of pulmonary hydatid cyst in a patient who had spent all of her life in one state is presented and briefly discussed. In the United States pulmonary echinococcal cyst is a disease of immigrants; infection of those who have never been out of this country is rare.

BIBLIOGRAPHY

¹ Barrett, N. R.: The Treatment of Pulmonary Hydatid Disease. *Thorax*, **2**: 21, 1947.

² Ceballos, A.: An Operation Performed in One Stage with Inhalation Anesthesia for Hydatid Cysts, Free of Adhesions. *J. Thor. Surg.*, **12**: 553, 1943.

³ Craig, C. F., and E. C. Faust: *Clinical Parasitology*. P. 516, Philadelphia, 1945, Lea and Febiger.

⁴ Davidson, L. R.: Hydatid Cysts of the Lung. *J. Thoracic Surg.*, **13**: 471, 1944.

⁵ Haight, C.: Discussion of ⁴.

⁶ Logan, A., and H. Nicholson: Hydatid Disease of the Lung. *Thorax*, **3**: 1, 1948.

⁷ Phillips, E. W.: Hydatid Cysts of Lung. *Arch. Surg.*, **21**: 1324, 1930.

⁸ Susman, M. P.: The Treatment of Pulmonary Hydatid Disease. *Thorax*, **3**: 71, 1948.

BOOK REVIEW

MONOGRAPHS ON SURGERY, 1952. B. Noland Carter, Editor. The Williams and Wilkins Co., Baltimore, Md.; 430 pages; \$12.50.

This book is the third in an annual series on pertinent surgical topics put out by the publishers in place of Nelson's Loose Leaf Surgery. It is edited by Dr. B. Noland Carter, who has as advisory editors Dr. Joe V. Meigs, gynecology; Dr. Charles Huggins, urology; and Dr. Alfred R. Shands, orthopedics.

The gynecologic section is devoted in its entirety to urinary stress incontinence. Six outstanding authorities on the subject discuss their methods, both surgical and non-surgical, of handling this difficult problem. The reader is thus afforded a well-rounded picture of the treatment of the condition.

Orthopedic topics include the internal fixation of fractures of the shafts of long bones, intracapsular fractures of the femoral neck, aseptic necrosis of the femoral head in adults and arthroplasty. In each, the subject matter is adequately discussed, and there are some very good technical descriptions. The article on internal fixation is particularly worthwhile.

Congenital ureteral and pelvic dilatation and renal tumors are discussed in the section on urology. The discussion on renal neoplasms is very complete, but would be more readable if the numerous references were not inserted into the text.

Several additional articles are included: Dr. Allen Whipple calls on his extensive experience to discuss radical surgery of pancreaticoduodenal cancer. There is an excellent evaluation of radioactive iodine in the diagnosis and treatment of thyroid disease from a surgical standpoint. The article on acute chest injuries is carefully detailed and if followed, would enable any surgeon to handle adequately these injuries. However, it seems that the placing of polyethylene catheters for rib fractures is a more elaborate procedure than necessary to handle the problem of chest pain. A discussion of the surgery of large arteries dealing particularly with technical problems regarding the subject rounds out the volume.

By design the book is not a complete surgical text, but the subjects covered are pertinent, well done, comprehensive, and authoritative. The volume is highly recommended.

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