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# CLINICAL DIAGNOSIS AND TREATMENT FOR HUMAN ECHINOCOCCOSIS IN CHINA

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## INTRODUCTION

Human echinococcosis is still a major public health problem, especially in northwestern, northern, and central parts of China, such as Xinjiang, Gansu, Tibet, Inner Mongolia, Qinghai, Ningxia and Sichuan. Based on the China CDC meeting in Urumqi and Dunhuang, approximately 1,000,000 hydatid patients have been recorded in hospital data involving a 20,000,000 population and 80,000,000 RMB loss by this endemic disease in China. In general, the incidence of human cystic echinococcosis (CE) was 95~97%, and alveolar echinococcosis (AE) was 3~5%. Some local regions only showed a high incidence of human AE, like Zhang County and Ming County in Gansu, and also Guyuan Prefecture in Ningxia, while the majority of the provinces and Autonomous Regions had mixed distributions of human AE and CE. Only in the clinical division of the First Teaching Hospital, Xinjiang Hydatid Clinical Research Institute (XHCRI), 4,728 patients have been recorded as 3,154 (65.3%) cases in the liver, 1,119 (23.2%) in the lungs, 150 (3.1%) in the abdominal/pelvic cavity, 100 (2.1%) in the brain, and 304 (6.3%) in other organs, including the kidney, bone, spleen, pancreas, and heart. Human CE was 97% and AE 3% in this center.

## CLINICAL DIAGNOSIS

Technologically, the two key procedures for diagnosis of human echinococcosis are imaging techniques and serology. US and CT have now been firmly established in the diagnosis of echinococcosis and are becoming more and more useful for clinical diagnosis and epidemiological survey. Under CT or US scanning, a typical CE cyst appears as a round or ovoid space-occupying lesion or a hypoechogenic area,

and 'double layers and arc calcification' can be considered specific for hydatid cyst caused by *E. granulosus* infection rather than other cyst diseases, ie congenital cyst in the liver or kidney. US and CT imaging can recognize rupture of the endocyst by showing a folded detached endocyst. An AE lesion is transonically characterized by an irregular parenchyma focus or hyperechogenic area with calcification either in nodular spots and/or ring forms. US may show a characteristic association with echogenic areas due to fibrosis, and transonic zones due to necrosis inside the parasitic lesion. US may also show hilar involvement and biliary dilatation with the classical 'shotgun' sign, or stenosis of the portal vein and/or the inferior vena cava with parasitic lesions. A correlative study on CT scan for diagnosis of AE patients shows a typical geographical map pattern with irregular contours. Inside the lesion, hypodense areas due to necrosis are associated with hyperdensity due to calcification. A retrospective comparison between imaging and histopathological findings in 67 AE patients with 100 separate lesions indicated that the radiological features were correlated directly with the pathological specimens from each patient, and moreover, the CT appearance was more specific for clinical diagnosis, while the US had an advantage in screening as well as for intraoperative use. Magnetic resonance imaging (MRI) has also been used to examine the relationship among AE lesions to large vessels and the heart, as well as directly for cardiac hydatid cysts.

An international imaging classification for human AE has been made by WHO/IWGE through 3 Hydatidology Congresses (XVII, XVIII, and XIX). Based on the high foci of human AE experience in the world, human AE is classified as Parasite, Nodes, and Metastasis (PNM). Meanwhile, the ultrasonographic classification for human cystic echinococcosis has been officially agreed as five patterns: CE I (simple cyst), CE II (multiple daughter cyst), CE III (ruptured cyst), CE IV (solid cyst), and CE V (calcified cyst), based on Garbi's classification in 1981. From the clinical point of view, more information needs to be demonstrated through the classification, for physicians and surgeons; thus, a new recommended classification is shown in Table 1.

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