

Article

Identification of hydatid cysts and concomitant liver enzyme dysfunction in patients from Al-Najaf and Al-Diwaniyah City by conventional and phylogenetic methods

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ABSTRACT

Hydatid cyst infection is a serious disease that affects humans who come into touch with the infective stage of the tapeworm *Echinococcus granulosus*, which is found all over the world. The current study used patient physical and laboratory examinations, X-ray imaging, ultrasonic inspection, and polymerase chain reaction (PCR) to identify hydatid cyst presence in patients from the Iraqi cities of Al-Najaf and Al-Diwaniyah and to identify hydatid cysts and concomitant liver enzyme dysfunction in patients from the Iraqi cities of Al-Najaf and Al-Diwaniyah using conventional and phylogeny. Both strategies used partial gene sequencing (PGS) to target the *E. granulosus* antigen subunit B2 (*EgB2*) gene. The findings revealed an abdominal lump (6-7cm, left costal border), leukocytosis (12103/mm³), eosinophilia (84101/mm³), and an increased erythrocyte sedimentation rate (ESR) (35mm/hr), ultrasonic-detected splenic and liver cysts, and increased levels of alkaline phosphatase (ALP)= Mean standard error (MSE) (170.12.3 IU/l). Patients with such changes were then given surgical interventions to diagnose and remove cysts, which were identified as hydatid cysts (wheel-like, "rosette-like," or "honeycomb-like" cysts with cystic cavity-based "snowflakes" like protoscoleces, wavy or serpentine-like cystic membranes of punctured or solid-pseudotumor ball-like calcified degenerated cysts, respectively). The existence of hydatid cysts from the *E. granulosus* tapeworm was discovered by PCR. The PGS validated the results of the previous tests, yielding three nucleotide-sequence-based isolates that were identical to those from Brazil (bovine), Argentina (camelid), and Bengal (buffalo). The study found hydatid cyst infection in human patients in the Iraqi cities of Al-Najaf and Al-Diwaniyah, implying the presence of the adult form of the worm, *Echinococcus granulosus* tapeworms, in dogs in these areas.

Keywords: *Echinococcus granulosus*, *EgB2* gene, hydatid cysts.