Isolated hydatid cyst of thyroid: An unusual case

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Abstract

Introduction: Hydatid cystic disease is a parasitic infestation that is mostly caused by *Echinococcus granulosus*, which is common in sheep-rearing areas of the Mediterranean, Middle East, Australia, New Zealand, South Africa, and South America. Canines are the definitive hosts, and herbivores (e.g. sheep, horses, deer) or humans are intermediate hosts. Ingested eggs from animal feces hatch in the gut and release oncospheres (immature forms of the parasite enclosed in an embryonic envelope).

Case report: A very rare case of isolated, thyroidal, hydatid cyst is presented.

Conclusion: Non-vascular cysts may be seen on ultrasonographic examination that are not specific for hydatid disease. Clinical and laboratory findings are therefore important. Definitive diagnosis is based on histopathological findings. Treatment is surgical and antiparasitic drugs are required after surgery.

Keywords

Echinococcus granulosus, atypical locations, ultrasound

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Introduction

Hydatid cystic disease is a parasitic infestation that is mostly caused by *Echinococcus granulosus*, which is common in sheep-rearing areas of the Mediterranean, Middle East, Australia, New Zealand, South Africa, and South America. Canines are definitive hosts, and herbivores (e.g. sheep, horses, deer) or humans are intermediate hosts. Ingested eggs from animal feces hatch in the gut and release oncospheres (immature forms of the parasite enclosed in an embryonic envelope). Oncospheres penetrate the intestinal wall and migrate via the circulation. Cysts are frequently seen in the liver (65%) and lungs (25%). There have also been rare reports of location in the thyroid gland.^{1,2} Thyroidal hydatid disease may be confused with simple thyroid cysts and/or semisolid nodules which are suspicious for malignancy. In this case report, an unusual case of isolated thyroidal hydatid cyst will be presented.

Case report

A 32-year-old female patient with progressively growing neck mass was referred to our clinic after physical examination for thyroidal ultrasound. A 13-mm diameter, pure anechoic, thin-walled cystic lesion was determined in the right lobe, and in the left lobe another cystic lesion was observed, 15 × 10 mm in size with similar morphological features to the first lesion. Both were non-vascular lesions on color Doppler ultrasound (CDUS) (Figures 1 and 2). From the history, it was learned that the patient had a dog, and received positive laboratory results for hydatid hemagglutination three

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weeks before the ultrasound examination. Considering the history and laboratory results, the cysts were thought to be related to hydatid disease. Fine needle aspiration biopsy was avoided and total thyroidectomy was carried out. Hydatid disease was proven histopathologically.

Discussion

Hydatid disease is generally caused by *E. granulosus*, and rarely by *Echinococcus multilocularis* infestation. Definitive hosts are canines and intermediate hosts are sheep, horses, deer, swine, or humans.³ Cysts generally involve the liver and lungs and are usually asymptomatic. Isolated thyroidal hydatid disease is very uncommon (0.5–1% of all hydatid cyst cases) and may present with neck mass, dyspnea, dysphagia, or dysphonia but is generally asymptomatic.^{4,5} Approximately 180 cases of thyroidal hydatid disease have been reported in English literature. Diagnosis is based on clinical history, physical examination, serological laboratory tests, ultrasound findings, and fine needle aspiration. Indirect hemagglutination test and enzyme-linked immunosorbent assay (ELISA) have

80% sensitivity and are the first step tests. ELISA can also be used for follow-up for recurrence. In ultrasonography, magnetic resonance imaging or computed tomography, detection of germinal vesicles is important for the diagnosis of hydatid disease. They are seen as non-vascular lesions on color or power Doppler ultrasound examinations. However, generally, findings are not specific. On scintigraphy the cysts are seen as cold nodules. Sometimes the lesions can be confused with malignancies because of the morphological features. As there is a risk of spreading and anaphylaxis, fine needle aspiration biopsy is not recommended. Treatment is surgical and to prevent recurrence, Mebendazole or Praziquantel is recommended after surgery. Definitive diagnosis is based on postoperative histopathological examination.^{6,7}

As the appearance is non-specific, differential diagnosis of hydatid cyst disease of the thyroid gland includes a large variety of pathologies. If the hydatid cyst looks like a simple cyst, it can easily mimic a simple thyroid cyst. Generally, colloid cysts of the thyroid gland contain echogenic foci with a comet tail artifact. This can be a useful guide for differentiation, but it is not always seen. Colloid cysts do not show Doppler flow, as hydatid cysts do. The important means of differentiating colloid cysts and hydatid disease is the laboratory results (indirect hemagglutination test and ELISA for *E. granulosus*) and a high level of suspicion of hydatid disease.⁷

It may also be difficult to differentiate solid thyroid nodules from hydatid cyst. Hydatid membranes and viscous content can appear to be solid. CDUS examination might help in these cases, as solid thyroid nodules generally show vascularisation, but hydatid cysts do not. Calcifications are not very useful in differentiation, because both thyroid nodules and hydatid disease can show coarse, macrocalcifications. Nevertheless, the visualisation of microcalcifications within a lesion indicates a thyroid lesion more than hydatid disease.^{6,7}

In the current case, the history of the patient and prior positive laboratory results for *E. granulosus*

Figure 1. Anechoic cystic lesions in both lobes of the thyroid gland [white arrows].

Figure 2. The lesions are non-vascular on color Doppler ultrasonography.

were the main factors leading to the diagnosis. Furthermore, as hydatid disease is endemic in Turkey, it is always at the forefront in the differential diagnosis of a cystic mass.

Conclusion

This case shows that in endemic regions, hydatid disease can involve atypical localizations such as the thyroid gland. It must be kept in mind that, although uncommon, thyroidal cystic lesions can occur as a result of hydatid disease. At this point, a thorough investigation of laboratory results and history of the patient is the key to correct diagnosis.

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