# Primary Hydatid Cyst of Parotid Gland: A Rare Case Diagnosed by Computed Tomography

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**ABSTRACT**

Hydatid disease is a zoonotic infection caused by Echinococcus species. The cystic form of this infection mostly involves liver and lung. Hydatid disease of the parotid gland even in endemic regions is a very rare entity that may be easily overlooked in daily practice. Herein, I present a case report of a 60-year-old Iraqi female patient who presented with a progressively painless mass in her right parotid. It was diagnosed radiologically as a hydatid cyst and was excised successfully. Histopathologic examination of the resected specimen confirmed the hydatid cyst. This case emphasizes the importance of considering hydatidosis in the differential diagnosis of any parotid mass, especially in endemic countries.

**Key words**: Echinococcosis, Hydatid cyst, Parotid,

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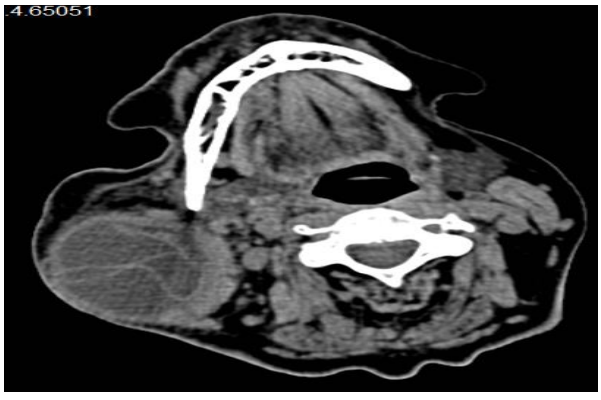
Hydatid cyst (HC) occurs because of infestation by the genus of Echinococcus. It is a global public health threat [1]. The greatest prevalence of hydatidosis in human and animal hosts is found in sheep raising countries, including Iraq [2]. Various parts of the body may be involved with HC but the liver and lungs are the main locations [3]. Primary hydatid cyst of the parotid gland is extremely rare even in the endemic areas and very few cases are reported in parotid gland [4-6]. The diagnosis relies on imaging techniques and the medical history. Another method that is helpful in the diagnosis is serological tests. Fine-needle aspiration biopsy is usually not recommended due to the potential risk of anaphylactic shock or spreading of daughter cysts. The preferred treatment method of hydatid cysts in the salivary gland is surgical excision. Here, I report a case of this rare entity of an isolated HC of the parotid which carries a diagnostic challenge.

## Case Presentation

A 60 years old female from Baghdad city came to the surgical outpatient clinic in Alkindy teaching hospital with complaints of swelling in the right parotid area for 4-year duration. History was taken, which revealed that the mass was painless and was gradually increasing in size, unnoticeable until 3 months back when it increased in size little rapidly. She also had some pricking sensation and itching. She was treated initially with antibiotics with no improvement. Physical examination revealed a cystic swelling, approximately 6 cm x 4.5 cm in size, in the parotid region with normal appearance of the overlying skin. It was non-tender and mobile. No symptom of facial nerve involvement was recorded. A provisional clinical diagnosis of a cyst or pleomorphic adenoma of the parotid gland was made. There was no other palpable lump or swelling anywhere in the body. On ultrasonography, a septated cystic mass was reported and the diagnosis of HC was suggested. Computed tomography (CT) scan of the head and neck revealed a round, well-demarcated water-density mass in the right parotid gland measuring 60 x 58 x 42 mm. Serpentine linear floating membranes were noted within giving the characteristic appearance of the contained ruptured HC. No significant enhancement was noted after IV contrast administration. There was no lymph node enlargement on either side of the neck. No evidence of bony destruction. Strap muscles appeared normal (Figure 1). Chest radiograph and ultrasonography of the abdomen were normal and serological test for hydatid disease was negative. Hematological investigation were hemoglobin 14 gm%, total leukocyte count 9800/mm$^3$, and ESR18 mm. Bleeding time and clotting time were within normal limit. Superficial parotidectomy was carried out under general anesthesia. At operation, a cystic mass was found replacing most of the parotid gland; the parotid capsule was blended with the fibrous wall of the cystic mass. The cystic mass and the remains of the parotid gland and its capsule were excised. Histopathological findings confirm the diagnosis. Patient's subsequent follow-ups were normal.

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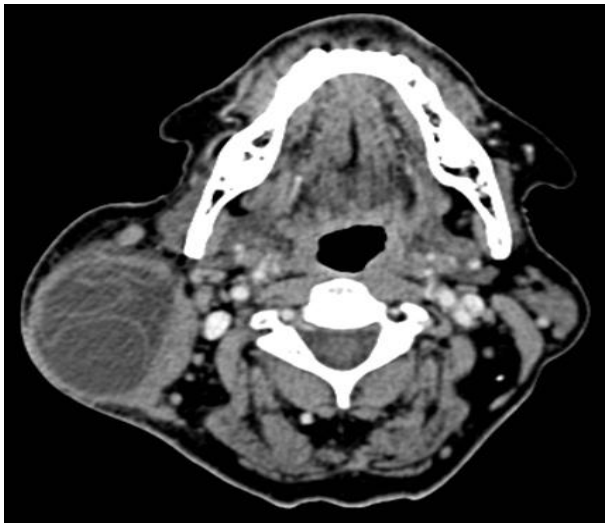

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Figure 1: Axial a) noncontrast enhanced b) contrast-enhanced CT scan images demonstrates replacement of the entire right parotid by a cyst which shows linear tortuous structures within suggestive of ruptured endocyst.

**Discussion:** HC is a disease caused by Echinococcus Granulosis that has worldwide distribution and can cause high morbidity and mortality [1]. HC is most commonly found in the liver and lung, while they can occur in other organs including muscle, brain, eye, spleen, kidney, orbit, lymphatic glands, myocardium, tonsil, pancreas, skin, ovary, uterus and parotid glands [4]. The parotid gland hydatid cysts are always primary [5]. Isolated primary hydatidosis of the parotid gland is rare and only a few cases were reported in the literature [4-6]. The patient, in this case, had no further lesions that were detected other than the parotid cyst.
Preoperative diagnosis of parotid hydatidosis is difficult clinically and radiologically. Parotid HC is an insidious infection with no specific symptoms and it grows gradually and may mimic any soft tissue tumor such as pleomorphic adenoma, epithelial cyst, and necrotic malignant tumor. Thus, the diagnosis of parotid HC needs a high index of suspicion.
The hydatid cyst has three layers: (i) The outer pericyst which consists of modified host cells that form a dense fibrous protective layer; (ii) the middle laminated layer which is acellular and impervious to bacteria, but allows the passage of nutrients; and (iii) the inner germinal layer where the scolices and laminated membrane are produced. The middle laminated layer and the germinal layer form the true wall of the cyst and are usually referred to as the endocyst. The thickness of these layers depends on the tissue in which the cyst is present [7]. Three types of cyst rupture have been described: Contained, communicating, or direct [7,8]. The present case shows the contained type of rupture where the endocyst ruptures, but the pericyst remains intact. Detached endocyst was seen as serpentine linear floating membranes within the cyst. The confirmation of the hydatid diagnosis is mandatory before surgical exploration and biopsy of the cyst to avoid leakage of cyst contents and the accompanying risks of anaphylaxis. Radiological studies, including CT, are the mainstay of the preoperative diagnosis of the parotid HC. In this case, the clinical primary impression was a pleomorphic adenoma, but the radiologist raise the suspicion of HC as a diagnosis especially in our endemic country and this made the surgeon refrain from doing the diagnostic aspiration biopsy. Although a variety of serological tests like latex agglutination and enzyme-linked immunosorbent assay (ELISA) are used to establish the diagnosis and follow-up of hydatid disease, more than half of serologies were negative in patients with salivary glands echinococcosis [5]. Unfortunately, the ELISA test was negative in this case.
Surgery is the treatment of choice for parotid HC and the best option for a complete cure. Chemotherapy with high-dose albendazole, mebendazole or praziquantel can be considered if the cyst is inoperable due to its location. Prevention is the key including education regarding the means of transmission. Personal hygiene and hand-washing are critical in rural areas inhabited by dogs and livestock. Dogs should not be fed the viscera of slaughtered animals.

**Conclusion:** Hydatid cyst of the parotid gland is very rare. Where the incidence of the disease is high, hydatid cyst of parotid gland should be considered in the differential diagnosis of lesions causing swelling of the parotid area.

**Conflict of interest:** The author declares that there is no conflict of interest.

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