

Hydatid Cyst of Thyroid Gland: A Case Report

Prashant Ghimire¹, Sagar Rana Magar², Bishal Panthi³, Prem Maharjan⁴, Intjar Khan¹, Neeraj Thapa⁵, Sujan Paudel⁶, Siddhartha Karn⁷, and Prajjwol Luitel²

¹Universal College of Medical Sciences

²Tribhuvan University Institute of Medicine

³Tribhuvan University Teaching Hospital

⁴Kathmandu University

⁵Nepal Medical College Teaching Hospital

⁶Institute of Medicine

⁷Tribhuvan University Institute of Medicine Maharajgunj Medical Campus

August 24, 2024

Hydatid cyst of thyroid gland: A case report

Prashant Ghimire, Universal College of Medical Sciences, Bhairahawa, Nepal

prashantghimire2011@gmail.com

Sagar Rana Magar, Tribhuvan University Institute of Medicine, Kathmandu, Nepal srm1440@gmail.com

Bishal Panthi, Department of Pathology, Tribhuvan University Teaching Hospital, Kathmandu, Nepal

pmbishal@gmail.com

Prem Bahadur Maharjan, Kathmandu University, Dhulikhel, Nepal

maharjan.sheen@gmail.com

Intjar Khan, Universal College of Medical Sciences, Bhairahawa, Nepal

khanintjar@gmail.com

Neeraj Thapa, Nepal Medical College Teaching Hospital, Kathmandu

thapaneeraj16@gmail.com

Sujan Paudel, Institute of Medicine, Kathmandu, Nepal

paudelsujan1824@gmail.com

Siddhartha Karn, Tribhuvan University Institute of Medicine Maharajgunj Medical Campus, Kathmandu, Nepal

100sidkarn@gmail.com

Prajjwol Luitel, Tribhuvan University Institute of Medicine Maharajgunj, Kathmandu, Nepal

drprajjwolluitel@gmail.com

Highlights

All healthcare providers should be familiar with the clinical signs and diagnostic characteristics of primary hydatid cysts located in the thyroid gland.

Corresponding author:

Dr. Prashant Ghimire, MD

Lecturer, Department of Pathology

Universal College of Medical Sciences, Rupandehi, Nepal

ORCID ID: 0000-0002-8734-293X

Email: prashantghimire2011@gmail.com

Source of Support: None

Conflict of Interest: None

Key Clinical Message

USG and CT are important modalities for detecting hydatid cysts. FNAC can confirm the diagnosis when doubtful. Despite their rarity in the thyroid, primary hydatid cysts should be considered as differential diagnosis for thyroid swellings, even in areas. Surgical resection remains the treatment of choice.

Key words: FNAC, hydatid cyst, thyroid gland, lobectomy, anti-parasitic drug

INTRODUCTION

Hydatid disease is a prevalent health issue, endemic in Middle East, Southeast Asia, Mediterranean countries, and South America accounting for 871,000 disability-adjusted life-years (DALYs) annually (1).

It is a zoonotic infection caused by the larval tapeworm of *Echinococcus granulosus*. Incidence of hydatid cysts is higher in cattle rearing areas, with 0.8 cases per 100,000 population in Southeast Asia as per World Health Organization (WHO) (2).

Nepal, similar to other developing nations has high incidence of echinococcosis, and cysticercosis, largely because of inadequate hygiene and sanitation (3).

Hydatid cysts occur most frequently in liver (50-77%), lungs (15-47%), spleen (0.5-8%), and kidneys (2-4%)(4). The prevalence of hydatid cysts in the thyroid gland ranges from 0% to 3.4%(4).

Hydatid cyst of thyroid is rare even in endemic countries (5).

Hydatid cyst of the thyroid gland is generally reported to be diagnosed only after surgical excision (5).

Aspiration cytology is widely recognized as the initial step in evaluating thyroid swelling. However, in patients with thyroid hydatid cysts, it can trigger anaphylaxis, dissemination, severe local inflammatory reaction making further surgery difficult (6).

Surgical excision is the treatment of choice for primary hydatid cyst of thyroid. Anti-parasitic medication therapy with albendazole or mebendazole is recommended for patients in whom surgery cannot be done (7).

In line with CARE guidelines, we present a rare case of primary hydatid cyst of thyroid gland diagnosed by FNAC and treated successfully with lobectomy (8).

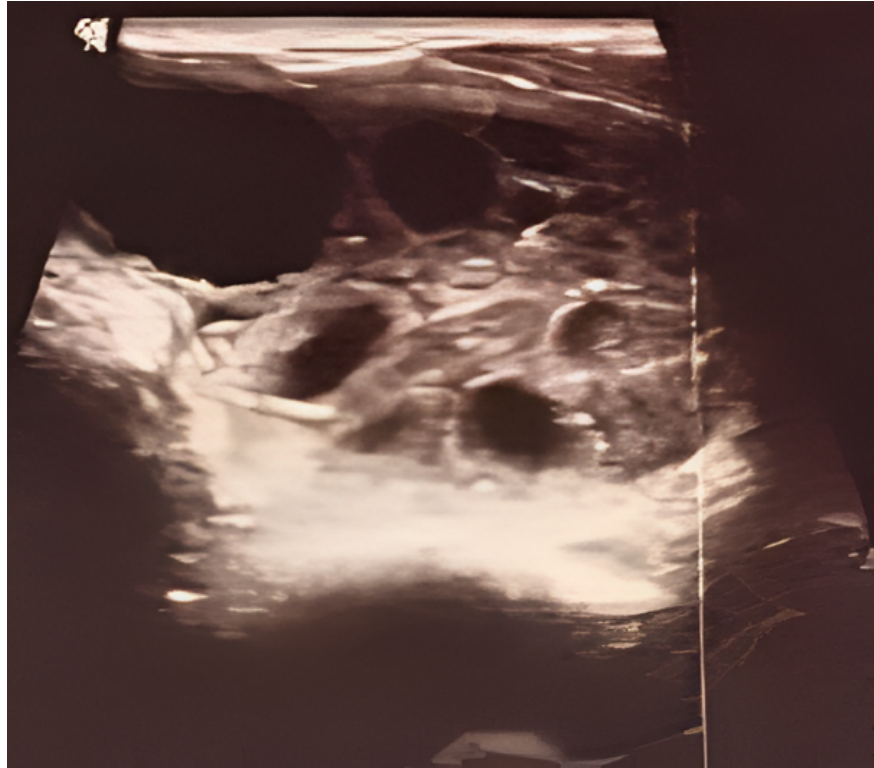
CASE HISTORY/EXAMINATION

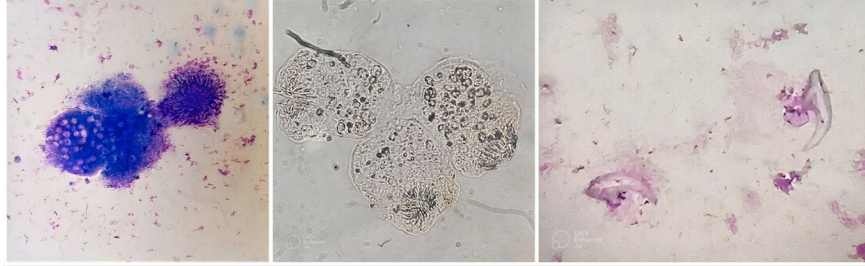
A 64-year-old male cattle farmer presented with complaints of asymptomatic neck swelling for two years with its size being static since last one year. He reported no associated voice change, dysphagia, dyspnea, fever, night sweats, or weight loss. On physical examination, a palpable, well defined, nontender nodular swelling was found on the anterior neck on the left side measuring 7 cm x 4 cm that moved with swallowing.

METHODS

Preoperative diagnosis of a hydatid cyst of thyroid origin can be challenging, as they can mimic tumors, abscesses, and other space-occupying thyroid lesions such as thyroglossal cysts and branchial cleft cysts (4) (9).

Complete blood count(CBC), thyroid function test, renal function test, blood sugar, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) were within normal limits. Ultrasonography (USG) of neck revealed a large multiloculated heterogeneous, anechoic lesion measuring 8.1 cm x 4 cm x 5 cm in left thyroid lobe and was designated a TI-RADS (Thyroid Imaging Reporting and Data System) -3 lesion[**Figure 1**]. The other lobe and lymph nodes were normal. With a differential of thyroid nodule, Fine needle aspiration cytology (FNAC) was performed which yielded 18 ml of granular to clear watery fluid. Post FNAC period was uneventful. Cytocentrifuged Giemsa stained and unstained smears showed multiple protoscolices having rostellum containing rows of refractile hooklets[**Figure 2**]. Numerous free hooklets, fragmented laminated membranes of ectocyst and germinative layer were identified. Refractile hooklets had claw-like appearances with pointed one end and bifid another end[**Figure 2**]. Enzyme-Linked Immunosorbent Assay (ELISA) was positive for *Echinococcus* with serum IgG levels of 13 Net Titers Units (NTU). Detailed computed tomography (CT) scan showed lesions that were limited to the thyroid. On detailed questioning, the patient gave no past history of hydatid cyst disease or similar symptoms in family members. A final diagnosis of the primary hydatid cyst of the thyroid was made.





Left thyroid lobectomy and isthmectomy were done under general anaesthesia; the sample was sent for histopathological evaluation. Perioperative course was uneventful with no change in voice, swallowing difficulty, surgical site infections, symptomatic hypocalcemia. The patient was discharged on the fourth post-operative day with prescriptions of levothyroxine, calcium, and calcitriol. Histopathology revealed an outer cuticular membrane and an inner germinal layer surrounded by pericyst layer confirming hydatid cyst. Antiparasitic drugs were not prescribed since there were no hydatid cysts in other sites. During follow-up at one year, he had no recurrence of symptoms, signs of *Echinococcus* infection.

CONCLUSION AND RESULTS

Surgical intervention was successfully carried out in our case and no anti-parasitic drugs were administered due to absence of any postsurgical complications like infections of surgical site and also due to no evidence of extrathyroid hydatid cysts. During follow-up at one year, he had no recurrence of symptoms, signs of *Echinococcus* infection and no recurrence of hydatid cyst in CT scan.

DISCUSSION

The first reported case of thyroid involvement with hydatid cyst was in 1946 (4). Since then, there have been reports from the endemic regions, however to our knowledge, none have been reported from South Asia.

Hydatid cyst of thyroid can develop either primarily (affecting only the thyroid) or secondarily (involving multiple organs). Possible pathogenesis is emergence of oncosphere larvae in gastrointestinal tract followed by passage to systemic circulation either after bypassing the liver or passing through liver and reaching to thyroid gland (5). Humans are accidental hosts and contract the disease by accidentally ingesting contaminated food and water or through contact with a definitive host (10). In our case, the patient had a history of exposure to cattle and sheep similar to that in previous cases.

Symptoms of hydatid cyst in thyroid depends upon size and adherence of the lesion to surrounding structures with most of the patients are asymptomatic except for non-progressive swelling as ours. The slow growing pattern explains clinical dormancy for several years (11). However, patients may complain of difficulty breathing, swallowing, hoarseness, anaphylaxis, pyogenic abscess formation and cystotracheal fistula secondary to erosion of tracheal wall by cyst wall (4).

USG is a routine investigation to visualize cyst and daughter vesicles. CT /MRI are used to assess the location of cyst in relation to its surrounding structures (4).

Despite having limited sensitivity and specificity in primary thyroid hydatid cyst disease, immunological methods like indirect hemagglutination, latex agglutination, ELISA, and immune electrophoresis are important modality if diagnosis remains unclear (12).

The role of FNAC in preoperative diagnosis of thyroidal hydatid cyst is controversial despite higher sensitivity and specificity pertaining to the high risk of anaphylactic reactions and the dissemination of cystic elements leading to inflammation making surgery difficult (4).

However, our patient didn't have immediate or late reactions following the USG guided FNAC.

Ultrasound scan of the neck was performed in our patient which was non-conclusive and FNAC findings revealed diagnosis of hydatid cyst of thyroid to detect the unilateral hydatid cyst on the left side of thyroid gland. To the best of our knowledge, there has been only a case of thyroid hydatid cyst diagnosed by FNAC before the surgery as in our case (6).

Although post-surgical histopathology remains gold standard, an integrative approach including patient history, place of origin, examination, imaging examinations like USG, CT scan, magnetic resonance imaging (MRI), scintigraphy, serological examination and FNAC (4).

Surgical resection is the preferred treatment option. Administering anti-parasitic drugs like Mebendazole or Albendazole may be alternative treatment when there is a contraindication for surgery and as postsurgical adjuvant chemotherapy for preventing recurrence. Follow-up is recommended after 3 months, 6 months and after a year of surgical operation (5)(7). The patient's condition significantly improved following her surgical operation, and no antiparasitic medications were needed as there were no complications after surgery.

AUTHOR CONTRIBUTION STATEMENT

Dr. Prashant Ghimire: conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft. Dr. Sagar Rana Magar: conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft. Mr. Bishal Panthi: conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft. Mr. Prem Bahadur Maharjan: conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft. Mr. Intjar Khan: conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft. Dr. Neeraj Thapa: conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft. Mr. Sujan Paudel: : conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft, writing – review & editing. Mr. Siddhartha Karn: conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft, writing – review & editing. Dr. Prajjwol Luitel : conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing – original draft, writing – review & editing.

DATA AVAILABILITY STATEMENT

Data supporting the conclusions of this report are contained within the report. Additional non-relevant patient data are protected under patient privacy regulations and policies.

CONFLICT OF INTEREST STATEMENT

The author(s) have no conflict of interests to declare.

ETHICS STATEMENT

Our institution does not require ethical approval for reporting individual cases or case series.

FUNDING INFORMATION

The authors did not receive any funding for this manuscript.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

GUARANTOR

Prajjwol Luitel is the guarantor.

Bibliography

1. Echnococcosis [Internet]. Available from: <https://www.who.int/news-room/fact-sheets/detail/echinococcosis>
2. Devleeschauwer B, Ale A, Torgerson P, Praet N, Maertens De Noordhout C, Pandey BD, et al. The Burden of Parasitic Zoonoses in Nepal: A Systematic Review. Carabin H, editor. *PLoS Negl Trop Dis*. 2014 Jan 2;8(1):e2634.
3. Sharma N, Tiwari SB, Gaire P, Manandhar U, Bohara S, Nepal G. An institutional experience of hydatidosis and cysticercosis in Nepal: a retrospective chart review. *Ann Med Surg*. 2023 Jun;85(6):2598–602.
4. Akbulut S, Demircan F, Sogutcu N. Hydatid Cyst Disease of the Thyroid Gland: Report of Two Cases. *Int Surg*. 2015 Apr 1;100(4):643–7.
5. Safarpour MM, Aminnia S, Dehghanian A, Borazjani R, Abbassi HR, Boland Parvaz S, et al. Primary hydatid cyst of the thyroid glands: two case reports and a review of the literature. *J Med Case Reports*. 2023 Oct 4;17(1):417.
6. Gökçe C, Patiroğlu T, Akşehirli S, Durak AC, Keleştimur F. Hydatid Cyst in the Thyroid Gland Diagnosed by Fine-Needle Aspiration Biopsy. *Thyroid*. 2003 Oct;13(10):987–9.
7. Hydatid cyst in the neck, an unusual localization of the disease: A case report. *Int J Surg Case Rep* [Internet]. 2023. Available from: <https://www.sciencedirect.com/science/article/pii/S22102612210077688>.
8. Gagnier JJ, Kienle G, Altman DG, Moher D, Sox H, Riley D, et al. The CARE Guidelines: Consensus-based Clinical Case Report Guideline Development. *J Diet Suppl*. 2013 Dec;10(4):381–90.
9. Taha A, Enodien B, Frey DM, Taha-Mehlitz S. Thyroglossal Duct Cyst, a Case Report and Literature Review. *Diseases*. 2022 Jan 25;10(1):7.
10. Lodhia J, Chugulu S, Sadiq A, Msuya D, Mremi A. Giant isolated hydatid lung cyst: two case reports. *J Med Case Reports*. 2020 Oct 24;14(1):200.
11. Eken H, Isik A, Balci G, Firat D, Cimen O, Soy Turk M. A Rare Case of Isolated Cystic Hydatid of Thyroid Gland. *Medicine (Baltimore)*. 2016 Mar;95(10):e2929.
12. Eshraghi M, Shahmoradi L, Ghoddoosi M, Sadati SJA. Diagnosis of Primary Hydatid Cyst of Thyroid Gland: A Case Report. *Biomol Concepts*. 2019 Jun 3;10(1):106–10.