Hydatid cyst of thyroid gland, a rare case report with a literature review

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ABSTRACT

INTRODUCTION: Although hydatid cysts can affect any organ in the body, reports regarding affection of thyroid gland are scanty in the literature. This report aims to present a case of thyroid hydatid disease with literature review.

CASE REPORT: A 48-year-old female presented with painless anterior neck mass of about 2 year duration. There was an ill-defined, central anterior neck mass, with a smooth surface and mobile with deglutition. Ultrasound of the thyroid gland revealed an enlarged left lobe of thyroid gland due to well defined thick wall cystic nodule. The patient underwent left thyroid lobectomy under general anesthesia, the pathology report revealed hydatid cyst of thyroid gland.

DISCUSSION: Liver and lungs are often the end destination for hydatid cysts, while other places like mediastinum, diaphragm, cardiac, smooth and skeletal muscles, abdominal and chest walls are rarely involved. In this case, the cyst affected even a rarer organ which was the left lobe of thyroid gland. Most of the time the disease is asymptomatic and is found accidentally, yet depending on the site and size of the cysts, symptoms can occur.

CONCLUSION: Hydatid disease of thyroid gland is an extremely rare condition. The main presenting symptom is swelling. Operation under general anesthesia is the only modality of treatment.

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1. Introduction

Hydatidosis as a zoonotic disease represents one of the oldest known diseases, dating back to Hippocrates era [1]. It is caused by Echinococcus multilocularis and Echinococcus granulosus infestation [2] from the Taeniidae family in the Cestode class [3]. Due to travelling, the disease is seen worldwide [1], however it is most endemic in areas with mild climates like Australia, Southeast Asia, New Zealand, Middle East, Mediterranean countries and South America [4]. Up to two-third of the affected patients present with liver involvement, and up to 25% present with lung involvement, while other organs involve like bone, kidney, muscle, pancreas, heart and brain constitute a small portion [5]. However even in endemic areas head and neck hydatidosis is a rare finding [6]. When mistook for malignancy, needle aspiration can endanger the patient’s life [7]. In line with SCARE guideline, we present a case...
of hydatid cyst in the thyroid gland, along with a brief literature review [8].

1.1. Patient information

A 48-year-old female patient presented with a painless anterior neck mass of about 2-year duration. The mass increased in size slowly and associated with mild shortness of breath. The patient was living in a village, working on a farm and she has a long history of animal contact such as sheep, goats and dogs. Past surgical history was positive for plastic operation for a burned face.

1.2. Clinical findings

On examination, there was an ill-defined, central anterior neck mass, with a smooth surface and mobile with deglutition. Investigations including complete blood counts, thyroid function tests, renal function tests, blood sugar and chest-X-ray were normal. Anti-thyroid peroxidase (anti-TPO) antibodies were negative. Ultrasound of the thyroid gland revealed an enlarged left lobe of thyroid gland (65 × 33 × 32 mm) due to a well-defined thick wall (reaching 4 mm) cystic nodule measuring about 40 × 32 × 32 mm, occupying the mid-low third of left lobe, with a mild peripheral vascularity and microcalcification.

1.3. Therapeutic intervention

The patient was prepared for general anesthesia (GA). Under GA, she underwent left thyroid lobectomy. The operation was completed within one hour. The pathology report revealed hydatid cyst of thyroid gland with pericystic adhesion (Fig. 1).

### Table 1

| Author/Reference | Year | Number of cases | Age | Sex | Presenting Symptoms | Management |
|------------------|------|-----------------|-----|-----|---------------------|------------|
| Eshraghi et al./26 | 2019 | 1               | 34 years | Female | growing tangible swelling in her neck (left side) | left lobectomy and isthmusectomy |
| Oksuz et al./29 | 2013 | 1               | 23 years | Male | hoarseness of voice and left lobe mass | subtotal thyroidectomy |
| Daniil et al./23 | 2015 | 1               | 26 years | Female | nodular goiter with moderate compression symptoms, swelling in front of her neck (left side) | total thyroidectomy |
| Hoysal et al./27 | 2019 | 1               | 14 years | Female | lump in her neck (Right), (Lift) and (Right) respectively | left hemithyroidectomy |
| Bastanhagh et al./7 | 1995 | 3               | 16,2460 | Female | neck lump Right side | Rt lobectomy, excision, excision |
| Dey et al./25 | 2014 | 1               | 30 years | Female | midline neck mass | Albendazole (conservative treatment) |
| Jain et al./24 | 2005 | 1               | 55 years | Female | enlarging neck mass, Right side | subtotal thyroidectomy |
| Azenidou et al./2 | 2011 | 1               | 23 years | Female | right thyroid nodule, right thyroid nodule | excision, excision |
| Rajabian et al./30 | 1991 | 2               | 1627 | Female | gradual swelling on the left side of the lower part of the neck | excision |
| Jiang et al./28 | 2019 | 1               | 54 years | Male | growing tangible swelling in her neck (left side) | hemi-thyroidectomy with isthmusectomy |
| Soygunlu et al./32 | 2007 | 1               | 18 years | Male | swelling in the left lobe, right solitary thyroid nodule | left hemithyroidectomy, bilateral near-total thyroidectomy |
| Yesim Erb et al./21 | 2005 | 2               | 2170 years | Male, Female | neck swelling, hoarseness, and neck swelling | total thyroidectomy, total thyroidectomy |
| Akbulut et al./3 | 2015 | 2               | 2657 years | Female | right-sided thyroid swelling nodule goiter | patient refused surgery right total and left subtotal thyroidectomy |
| Saba et al./30 | 2007 | 1               | 30 years | Male | right side neck lump | Albendazole, and aspiration |
| Ozdemir et al./11 | 1989 | 1               | 54 years | Female | swelling in neck | excision, excision |
| Avcu et al./6 | 2010 | 1               | 48 years | Male | palpable and growing mass in the neck right side | bilateral total thyroidectomy |
| Sutana et al./19 | 2016 | 1               | 35 years | Female | left cervical tumefaction | lobectomy with isthmusectomy |
| Batrin et al./2 | 2015 | 1               | 32 years | Female | cold thyroid nodule | Resection |

Fig. 1. intraoperative picture showing whitish cyst consistent with cyst’s germinal layers.

1.4. Follow-up and outcomes

Postoperatively, the patient was sent for computed tomography scan (CT scan) of the head, neck, chest, abdomen and pelvis, the result was negative. The patient was remained in hospital for two days. The patient was put on anthelminthics for three months. Six months later, the patient was free from recurrence.

2. Discussion

Hydatid disease is a parasitic infection seen all over the world, though mostly in regions like Eastern Europe, South Africa, Middle East, South America, Australia and Mediterranean region where cattle and sheep rearing is common [2]. The current case has history of sheep and cattle contact.
Liver and lungs are often the end destination for cysts, while other places like mediastinum, diaphragm, cardiac, smooth and skeletal muscles, abdominal and chest walls [9–14] are rarely involved. In this case, the cyst affected even a rarer organ which was the left lobe of thyroid gland. Just like this case, it is seen more frequently among middle-aged women [5]. Most of the time, the disease is asymptomatic and is found accidentally, yet depending on the site and size of the cysts, symptoms can occur. Hewa et al. received a 22-year-old with complete paraplegia, later proven to be Hydatid disease of spine and recovered after operation [15]. This patient presented with painless anterior neck mass of about 2 year duration.

Echinococci species pass through three developmental stages in their life cycle, in the adult form they reside in their definitive host intestines and these are carnivores, most commonly dogs. Then their eggs will be excreted to the environment through feces and when ingested by intermediate hosts, which commonly include pig, camel, cattle, goats and sheep, they form metacestodes [10]. Humans are not naturally included in their biological life cycle, instead may accidentally become an intermediate host when ingesting food contaminated by dog feces containing the echinococcosis eggs [16,17]. Once the eggs reach the gastrointestinal system, they will rupture and larvae emerge. These larvae penetrate the intestinal wall and reach the hepatic sinusoids through the portal system. Larvae that reach the lung are small enough to escape liver’s filtration system [3].

Ultrasonography (USG),Computed Tomography scan (CT), Magnetic Resonance Imaging (MRI), Scintigraphy and fine-needle aspiration cytology (FNAC) are the standard methods for diagnosing Hydatid cyst [3]. To this day worldwide, complete surgical excision with perioperative albendazole is most commonly practiced and regard as the standard. The results are outstanding with low recurrence rate.

Two forms of thyroid gland hydatid cysts have been described [2,3]. When the diagnosed hydatid disease is confined to the thyroid gland with no evidence of the disease elsewhere, this is referred to as primary form. The literature contains very few reports of the primary form of thyroid hydatid disease (Table 1). Presence of other organ involvement like liver, lung and others labels the disease as secondary form [3]. This case is primary thyroid hydatid cyst due to not having the cyst before or elsewhere. When the size of the cyst increases, it may mimic thyroid carcinoma and adhere to surrounding structures like strap muscles, recurrent laryngeal nerve, trachea, esophagus and carotid sheath [2]. In this case, the cyst was surrounded by normal thyroid tissue of the left lobe.

Currently medical treatments are not effective, thus surgical excision still provides the best outcome. Càrlò et al. resected hydatid cyst of the trapezius in an old age male under local anesthesia [18]. Medical treatment with albendazole or mebendazole may still be tried in cases unfit for surgery, although adverse reactions and unpredictable results have been reported.

When performing surgery, the aim is to remove the cyst completely while avoiding spillage of its content. Reported complication include organ damage, abscess and secondary cyst formation and most importantly anaphylaxis if the cyst ruptures [19,20,22,31]. The current case was free from complication.

### 3. Conclusion

Hydatid disease of thyroid gland is an extremely rare condition. The main presenting symptom is swelling. The diagnosis is suspected by ultrasound while it only can be confirmed after pathological examination of the specimen. Operation under general anesthesia is the only modality of treatment.

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**Ethical approval**

Approval is not necessary for case report in our locality.

**Consent**

Consent has been taken from the patient and the family of the patient.

**Author contribution**

Abduulwahid M. Salih: Surgeon performed the operation and follow up.
Shwan H. Mohammed, Fahmi H. Kakamad, and Rawezh Q. Salih: Writing the manuscript and follow up.

**Registration of research studies**

Not applicable.

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Here is no conflict to be declared.

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