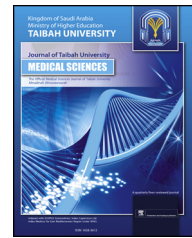




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Case Report

Diagnostic imaging and surgical management of a congenital cervical teratoma

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المخلص

التيراتومات (الأورام المسخية) العنقية الخلقية هي أورام نادرة، تنشأ في الرقبة وتتكون من ثلاث طبقات نسجية رئيسية من أنسجة الجنين: الأديم الظاهر، والأديم المبطن، والأديم المتوسط. والغالبية العظمى من التيراتومات العنقية هي أورام حميدة. إلا أن الأهمية السريرية لهذه الأورام تنشأ من مضاعفاتها أثناء الحمل بسبب أثر الكتلة بعد الولادة على مجرى الهواء والمريء.

من الممكن تشخيص التيراتومات العنقية الخلقية من خلال الفحص بالأشعة فوق الصوتية في وقت مبكر قبل الولادة. ويعتمد الشكل على حجم الورم، وعادة ما تظهر كتلة عنقية كبيرة بمحتويات صلبة وتكيسية، تتسبب في رجوع مفرد للرقبة إلى الخلف، وكثيراً ما تُصحب بالاستسقاء السلوي. تساعد الأشعة فوق الصوتية في فترة ما بعد الولادة في تمييز التيراتومات العنقية الخلقية من الكتل العنقية الخلقية الأخرى الشائعة. وأفضل طريقة لتقييم صلابة الورم، وامتداده للأنسجة المحيطة وتأثيره كتلة على محتويات الرقبة هي التصوير بالرنين المغناطيسي. في تقرير الحالة لدينا نعرض طفلاً نتج عن حمل كامل وُلد بكتلة عنقية ضخمة. كان التصوير بالرنين المغناطيسي مفيداً في إظهار محتواها، وامتدادها للأنسجة المحيطة، وتأثيرها كتلة على محتويات الرقبة. والتريسم الواضح للكتلة يسهل الإزالة الجراحية الكاملة دون مضاعفات.

**الكلمات المفتاحية:** التيراتومات العنقية؛ الأورام المسخية؛ الخلقية؛ كتلة عنقية؛ كتلة عنقية رخوة؛ الاستئصال الجراحي

Abstract

Congenital cervical teratomas are rare tumours arising from the neck and consist of three major tissue layers of an

embryo: the ectoderm, endoderm, and mesoderm. A great majority of cervical teratomas are benign tumours. However, the clinical significance of these tumours arises from the complications they can cause during pregnancy due to the postnatal mass effect on the airway and oesophagus of the neonate.

Diagnosis of a congenital cervical teratoma is possible during an early prenatal ultrasound evaluation. The appearance depends on the size of the tumour, but it is typically a large neck mass with solid and cystic components that causes hyperextension of the neck and is frequently associated with polyhydramnios. In the postnatal period, ultrasound helps in differentiating cervical teratoma from other common congenital cervical masses. MRI is the modality of choice to evaluate the consistency of the tumour, surrounding soft tissue extent of the tumour, and any mass effect on other cervical structures. In our case report, we present a case of a full-term baby that was delivered with a large cervical mass. MRI was helpful in demonstrating the complex content of the mass, surrounding soft tissue extension, and mass effect on other major cervical structures. The clear demarcation of the mass facilitated complete surgical removal without complications.

**Keywords:** Cervical soft tissue mass; Cervical teratoma; Congenital; Neck mass; Surgical excision

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## Introduction

Congenital cervical teratomas are rare germ cell tumours arising from the neck. Most of these tumours are benign, though malignant transformation has been rarely described. They are usually diagnosed during the prenatal period and require multidisciplinary management to improve the prognosis. Ultrasound and MRI evaluation are very useful to differentiate these tumours from other common congenital cervical masses, such as lymphatic malformations (cystic hygromas), through evaluation of their vascularity and soft tissue content.

The purpose of this article is to describe the radiological manifestations of congenital cervical teratomas and highlight the main differentiating points compared with other similar masses such as cystic hygromas.

## Case report

Our case is a full-term baby girl, born by spontaneous vaginal delivery, who had a large neck mass discovered at birth. On physical examination, the mass was warm and more prominent on the left side of the neck with a firm, multicystic consistency (Figure 1). Initially, the newborn had stable vital parameters and no respiratory compromise. However, she developed respiratory distress and was intubated on the 5th day after birth. Chest radiographs performed at birth showed a large neck mass with faint scattered calcifications. MRI revealed a large left anterolateral multi-loculated complex mass lesion measuring  $7 \times 8.5 \times 7.5$  cm and extending from the level of the mandibular angle to the level of the thoracic inlet. The mass displaced the oesophagus and airway to the contralateral side and attenuated the left internal carotid artery and left internal jugular vein. The radiological appearance was characteristic of a congenital cervical teratoma (Figure 2).

The infant underwent surgical excision through a left transverse incision directly over the mass. The tumour surface was exposed in the sub-dermal plane. A capsule was present, allowing a plane of dissection of the mass from the surrounding structures, which were displaced but not infiltrated. It was lobulated grey-white mass (Figure 3). Complete excision of the mass without rupture of the capsule rupture was successfully performed and the specimen was sent for histopathological examination.

Histopathology revealed a lobulated grey-white solid mass with areas of cystic changes that was well-capsulated and measured approximately  $10 \times 7 \times 5$  cm. The microscopic findings showed that the tumour was composed of a mixture of predominantly mature as well as embryonal tissue with ectodermal, mesodermal and endodermal components. The immature tissue component was the neuroepithelium, which had areas of necrosis without any evidence of mitosis. The capsular margin was intact without any vascular invasion. The final diagnosis was an immature teratoma (Grade II) with no mitosis, lymphovascular or capsular invasion.

## Discussion

Teratomas are classified according to their cellular differentiation as mature, immature or malignant. Mature



**Figure 1:** Left huge, lobulated and soft cervical mass with visible dilated vessels.

teratomas usually contain well-differentiated tissues from the three germ cell layers: ectoderm, mesoderm, and endoderm. Immature teratomas also contain tissues from all the germ cell layers, but immature tissues, primarily neuroepithelial tissues, are present. Teratomas can also be graded from 0 to 3 based on the amount of immature tissue found in the tumour specimen. All teratomas that contain malignant foci and those immature teratomas with metastasis are considered malignant.<sup>1</sup>

The main differential diagnoses for foetal neck masses include lymphangiomas or cystic hygromas, cervical teratomas, haemangiomas, branchial cysts, cervical neuroblastomas, soft tissue sarcomas, and congenital cervical thyroid goitres. One differentiating feature of foetal neck masses is on their location, as teratomas are frequently anteriorly located and along the midline, whereas lymphangiomas or cystic hygromas, haemangiomas and branchial cleft cysts are more posterior and lateral in location.<sup>2-4</sup>

Large congenital cervical teratomas can cause hyperextension of the neck and reduced amniotic fluid swallowing leading to polyhydramnios, which is seen in one-third of the cases, along with subsequent pulmonary hypoplasia and hypoventilation.<sup>2,5,6</sup>

Medical imaging is the cornerstone of early detection of congenital cervical teratomas, mainly as a prenatal diagnosis using ultrasound or MRI, and plays an important role minimizing the risk of complications. If the diagnosis is still not definitive, additional radiologic investigations can also be performed postnatally, with the exception of a CT scan, which is rarely indicated due to the hazards of radiation in a newborn.

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