Mature thyroid teratoma in a newborn

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DESCRIPTION

A 35-week gestational age woman presented with right lateral neck swelling, previously detected in prenatal ultrasound at 24 weeks of gestation. Elective endotracheal intubation was performed in the first minute of life via ex utero intrapartum (EXIT) procedure. During the first day of life, already in the neonatal intensive care unit, the neonate developed severe respiratory distress, with haemodynamic instability, requiring an increase in the FiO2 up to 100% (previously FiO2 was 30%), and a single dose of surfactant (200 mg/kg) was administrated.

On laboratory tests, neoplastic markers, such as alpha-fetoprotein and human beta-choriogonadotropin, were within the normal range.

Preoperative ultrasound scan and MRI were performed at the second and third days of life, respectively.

MRI revealed an exuberant expansive cervical lesion with well-defined limits centred on the visceral space of the neck with bilateral extension, with slight laterality to the right, resulting in a marked mass effect on the airway and the main cervical vascular-nervous axis. The tumour had intermediate T1 signal and T2 moderate–high signal, with multiple lobulations and intrinsic septations, and also intense and relatively homogeneous contrast enhancement (figure 1).

After a careful multidisciplinary discussion between paediatric surgery, anaesthesiology, endocrinology, neonatology and radiology, the mass was excised on the fifth day of life, through a transverse cervical incision. To plan the ideal surgical approach, imaging evaluation of the extension of the lesion and its relationship with adjacent structures, such as the trachea, oesophagus and neck vessels, was crucial. A safe airway, that was already established since birth, and haemodynamic monitoring during the procedure were the main factors to consider regarding anaesthetic management.

The intraoperative finding consisted of a heterogeneous capsulated cervical tumour measuring 7×5 cm, accompanied by an absent thyroid gland (figure 2).

Histopathologic examination showed that the tumour was composed of a variety of tissues from all three germ cell layers, with thyroid tissue also present. There were no signs of immature components or signs of malignancy, consistent with the diagnosis of mature thyroid teratoma.

Tight analytical control of thyroid function was performed since the surgery, and on the third postoperative day, levothyroxine (25 μg/day oral) was started due to subclinical hypothyroidism. On the eighth postoperative day, the dose of levothyroxine was adjusted to 12.5 μg/day, which is the current dose.

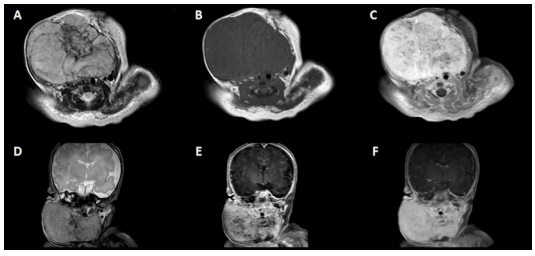

Figure 1 MRI, (A) axial T2-weighted image, (B) axial T1-weighted image, (C) axial T1-weighted image fat sat G+, (D) coronal T2-weighted image, (E) coronal T1-weighted image G+ and (F) coronal T1-weighted image fat sat G+ showing exuberant expansive cervical lesion with well-defined limits centred on the visceral space of the neck with bilateral extension, with slight laterality to the right, extending superiorly from the plane of the right zygomatic arch to the plane of the sternal notch inferiorly, with a slight insinuation in the superior mediastinum; shows T1 intermediate signal and T2 moderate-high signal, with multiple lobulations and intrinsic septations, and also intense and relatively homogeneous contrast enhancement, with a preponderant solid lesion and abundant vascular pathways within it; results in marked mass effect, in particular on the airway and the main cervical vascular-nervous axis.

The neonate had the endotracheal tube until the 12th day of life when he was electively extubated to CPAP, and since the 17th day of life has remained without supplemental oxygen therapy.

She was discharged from the hospital after 23 days, with favourable clinical evolution. The follow-up ultrasound, 6 months later, showed no evidence of recurrence.

Cervical lesions presenting in the fetal period are often large and may have various aetiologies, with cervical lymphangiomas and cervical teratomas being the two most common.[1]

Teratomas are germ cell tumours that contain derivatives of all three germ layers and may originate anywhere along midline and paramidline in both gonadal and extragonadal sites. The head and

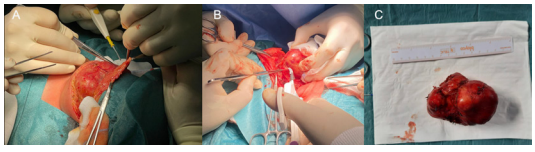

Figure 2 (A, B) Intraoperative pictures showing a lobulated heterogeneous mass arising from the thyroid gland expected location, (C) gross appearance of the mass following excision.

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neck region is an uncommon site of extragonadal involvement, particularly those arising from the thyroid gland.[2 3]

They typically present as a rapidly enlarging lateral or midline neck mass, which frequently causes airway obstruction, and other compressive symptoms, depending on the site and size of the lesion.[4]

Cervical teratomas are of thyroid origin if at least one of the following criteria is present: 1—the teratoma occupies a portion of the gland; 2—it is in direct continuity with the gland; 3—or there is a total absence of the thyroid gland.[5]

Cross-sectional imaging can not only help characterise and differentiate teratomas from other congenital cervical masses but also clarify the neoplasm location and extension before adequate treatment. The differential diagnosis should include lymphoid hyperplasia, lymphoma, cystic hygroma and thyroglossal duct cyst.[5]

The presence of a heterogeneous solid and cystic mass, containing calcifications and fat tissue, suggests the diagnosis of teratoma, or rule out other differential diagnostic entities.[3]

Management of fetal neck masses associated with airway compression requires a multidisciplinary planned surgical birth via EXIT procedure. The baby is partially delivered while remaining attached to the placenta, securing the neonate's airway with tracheostomy, and only then the delivery is completed.[1 4]

Postnatal surgical resection is currently considered the optimal treatment of head and neck teratomas without malignant components.[6]

Learning points

- Thyroid teratoma is an extremely rare neoplasm, which can cause severe airway obstruction.
- Preoperative cross-sectional imaging may help in achieving a diagnosis and evaluating the extension of the lesion and its relationship with adjacent structures.
- A multidisciplinary approach is fundamental for targeted postnatal management, improving patient prognosis.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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