Hemangioma of the parotid gland, also known as hemangioma, represents only 1% to 5% of all salivary gland tumors, however, it is the most common tumor of the salivary glands in childhood. The female sex is affected three times more frequently than the male sex; the mean age of onset is around 4 months, and most of them are diagnosed during the first 16 months of life. Congenital hemangiomas are classified on the basis of the pathological anatomy as capillary or cavernous type. Congenital capillary hemangiomas prevail in the first year of life and represent 90% of the tumors involving the parotid gland, whereas cavernous hemangiomas occur in older children and adults and most patients are older than 16 years of age. Capillary hemangiomas manifest as a soft tissue mass that becomes evident shortly after birth and grows rapidly during the first year of life, undergoing slow spontaneous regression during late childhood. Since resolution is usually complete by adolescence, only 10% need treatment. Cutaneous involvement of the overlying skin is found in more than 50% of the cases and there may be cutaneous malformations that substitute the skin involvement. A review of the presenting symptoms, clinical examination, and an assessment of complications such as pain, feeding difficulties, hearing loss, or dysphonia can help to confirm or rule out the diagnosis. Ultrasonic aids in differential diagnosis of vascular malformations, whereas MRI is the gold standard for vascular malformations. The purpose of this paper is to describe a rare parotid hemangioma with no involvement of the skin overlying the lesion, causing a diagnostic challenge. Therefore, it is essential to know the imaging features associated with hemangioma of the parotid gland in order to be able to identify this lesion on radiological studies and avoid unnecessary biopsy.
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**Case Report**

A 1-month and 18-day-old girl presented to the emergency department for a recent onset of right swelling in the preauricular area that had been progressing for about two days. Physical examination confirmed the presence of painless swelling, which seemed to cause a slight erasure of the angle of the mandible. There were no other important features, namely redness of the surrounding skin or cutaneous marks. The pregnancy and delivery had been unremarkable and the child was otherwise healthy.

Ultrasound demonstrated an hypoechogenic area with lobulated contours that involved almost all superficial lobe of the parotid gland (fig. 1).

On Color Doppler ultrasound there was increased internal vascularization with numerous large blood vessels within the mass (fig. 2).

The hypothesis of an infectious process (parotiditis) was considered as the most probable diagnosis, even though the hypothesis of vascular malformation was also thought of, and imaging reevaluation was advised after proper treatment. One week later the symptoms remained similar and a new ultrasound was performed, with overlapping findings.

**Figure 1** – Ultrasound image of the right parotid gland shows an enlarged and heterogeneous gland with an hypoechogenic area replacing almost the entire superficial lobe.

On Color Doppler ultrasound there was increased internal vascularization with numerous large blood vessels within the mass (fig. 2).

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**Figure 2** – Color Doppler ultrasound showed marked vascularity within the gland.

Magnetic resonance imaging (MRI) demonstrated the presence of a lobulated lesion centered to the right parotid space replacing almost the entire gland. The lesion was isointense to the muscle on T1 weighted images and hyperintense on STIR. There were also large vessels within the mass that could be seen as flow voids (Fig 3).

After gadolinium administration, an intense and homogeneous enhancement was seen as well as multiple prominent vascular structures.

These imaging features confirmed the diagnosis of hemangioma of the parotid gland. Since this lesion caused compression of the sternocleidomastoid muscle with associated symptoms, treatment with propanolol was started. The child did not develop any adverse effects from the treatment and after one year there was a marked regression of cervical swelling.

**Discussion**

Noninflammatory masses of the salivary gland region in children are extremely rare. Hemangioma of the parotid gland, also known as hemangioma, represents only 1% to 5% of all salivary gland tumors, however, it is the most common tumor of the salivary glands in childhood.

Because of its benign nature, clinical and imaging diagnosis is essential in order to avoid unnecessary biopsies. The diagnosis of a hemangioma of the parotid gland is based on the typical clinical history of a mass that becomes evident after birth and shows rapid growth. The natural
History is a mass that rapidly increases in size in childhood followed by a gradual and continuous involution up to 5 to 8 years. The presence of associated “strawberry skin” spots or the involvement of the skin overlying the lesion helps to confirm the diagnosis; if these findings are absent, the diagnosis may become challenging. Imaging studies help to make the diagnosis in those difficult cases.

Ultrasonography is part of the initial approach given its safety, low cost and the possibility of being performed without sedation. It also allows the exclusion of infectious etiology. The typical ultrasound findings of a hemangioma consist of the presence of a homogeneous mass that replaces almost the entire parotid gland, with lobulated contours, fine internal septa and various intratumoral vascular structures. The identification of numerous vessels within the lesion is essential for the radiological diagnosis. Magnetic resonance imaging demonstrates the presence of a mass in the parotid gland with lobulated contours, which is isointense to muscle in T1-WI and hyperintense in T2-WI, with prominent vascular flow voids within. After gadolinium administration there is homogenous enhancement and the identification of large tortuous vessels within the lesion. MRI also provides useful information on the size and deep extent of the tumor and its relationship to adjacent structures. The solid component of the hemangiomas distinguishes these lesions from other vascular lesions, including cystic lymphatic malformations (cystic hygroma), as the later does not demonstrate extension beyond the parotid and does not contain prominent vessels.

Other differential diagnoses consist of rhabdomyosarcoma, which is rare in childhood; congenital infantile fibroma, usually an heterogeneous lesion (unlike hemangioma); solitary infantile myofibromatosis, which is a hypovascular lesion; and sialoblastoma, which in addition to being very rare does not present flow voids on MRI. Given the high probability of spontaneous regression, parotid hemangiomas may not receive treatment. Nevertheless, their rapid growth may cause cosmetic problems, and also, rarely, signs of heart failure may appear in cases of significant shunt. In addition, obstruction and/or distortion of adjacent structures as well as mass ulceration are potentially serious complications. Surgical resection is not recommended because of the risk of damage to the facial nerve and the favorable prognosis with expectant management.

In the past, large symptomatic hemangiomas were treated with systemic corticosteroids. However, various studies have reported the advantages in using propranolol in the treatment of infantile hemangiomas. Propranolol showed to be clinically effective, resulting in fewer surgical interventions needed, and well tolerated with minimal adverse effects. Therefore, propranolol should be the first line treatment used for complicated hemangiomas.
Conclusion

In patients with a typical clinical history, the diagnosis of hemangioma of the parotid gland is usually straightforward. However, in atypical cases, when there is no involvement of the skin overlying the lesion, the diagnosis can be challenging. Thus, it is important to know its imaging features in order to be able to identify this lesion on radiological studies and avoid unnecessary biopsies.

References