Introduction

Dermoid cysts are benign neoplasms that derive from the mesoderm and ectoderm germ layers [1,2]. Dermoid cysts typically contain keratinizing squamous epithelium and respiratory epithelium along with dermal elements, including smooth muscle, hair follicles and fibroadipose tissue [1,2]. Dermoid cysts are the most common congenital cyst of the head and neck, accounting for 58.9% of pediatric congenital cysts in this location [1]. Of dermoid cysts, 89% present at the lateral eyebrow, 3.7% present at the medial eyebrow, 3.7% present at the midforehead and 1.8% presented preauricularly and 1.8% presented in the upper forehead [1]. Midline neck dermoid cysts located inferior to the submental area are exceedingly rare. Only four other cases have been reported [2-5].

A two-and-a-half year old female was referred to us for evaluation of a midline neck mass just above the suprasternal notch (Figure 1). Her mother reported that the mass was first noticed at one year of age. The mass had slowly increased in size and remained asymptomatic in nature. The clinical examination revealed a well-circumscribed, mobile, non-tender, firm mass of 8mm in diameter. Under general anesthesia, the mass was excised (Figure 2) and sent to pathology for analysis. The mass was a hard, spherical, tan-yellow tissue measuring 7x7x7mm (Figure 3). Upon bisection, a pasty grey-white interior was revealed. Under microscopic analysis, the mass was a keratinaceous, debris-filled, squamous epithelium-lined, cystic structure with skin-appendage structures in its wall. The mass was histologically diagnosed as a dermoid cyst.

Figure 1: Neck mass just above the suprasternal notch.
Discussion

The dermoid cyst from the presented case can be classified as congenital inclusion group 4. Congenital inclusion dermoids form at the lines of embryologic fusion [6]. Group 4 dermoid cysts are seen at the mid-dorsal or mid-ventral embryologic fusion sites and are found suprasternal, thyroidal, or suboccipital [3,6]. Group 1 cysts, the most common, are periorbital, group 2 cysts present at the bridge of the nose [3,6] and group 3 cysts present submentally, thyrohyoid, or at the floor of the mouth [3,6]. Group 4 cysts are the rarest type of congenital dermoid cyst [3].

Despite the rarity of suprasternal congenital dermoid cysts, they should be included in the differential diagnosis of suprasternal midline masses in children, along with other teratomas, thyroglossal duct cysts and bronchogenic cysts. Dermoid and epidermoid cysts can be differentiated by the fact that dermoid cysts contain squamous epithelium along with skin appendage elements such as hair follicles and eccrine glands [1,3-6], while epidermoid cysts contain only squamous epithelium [7]. Epidermoid cysts are more common than dermoid cysts in the suprasternal notch [3].

Bronchogenic cysts can occur at the suprasternal notch however; this is rare [3]. Bronchogenic cysts are congenital cysts that derive from the primitive foregut [8,9]. They are generally unilocular and generally contain clear fluid. They are lined by columnar ciliated epithelium and often contain cartilage and bronchial mucous glands. They can occasionally have a patent connection to the airway, and are often symptomatic [8,9]. These pathological differences allow them to be easily differentiated from dermoid cysts.

Thyroglossal duct cysts are typically located inferior to the hyoid bone, and are the most common cause of midline neck masses [10,11]. They result from failure of closure of the thyroglossal duct between the base of the tongue and the thyroid gland [11]. They typically present as an asymptomatic mass in the pediatric population. They can be differentiated from dermoid cysts by the fact that they move with swallowing or tongue protrusion [10]. In addition, ultrasonography can be used to diagnose a thyroglossal duct cyst [11]. The treatment for thyroglossal duct cysts involves needle aspiration and antibiotics [10]. These cysts can become infected and can also become a thyroglossal duct cyst carcinoma [10,11], whereas there is no evidence that suprasternal dermoid cysts can become cancerous.

Ultrasound analysis may be useful in differentiating dermoid cysts from other masses which may appear similar upon physical examination only [2,7]. Computerized Tomography (CT) or Magnetic Resonance Imagery (MRI) may also aid in diagnosis, and can be used to determine whether the cyst extends into the cranium or orbit of the eye [2,6].

The definitive treatment for dermoid cysts is direct surgical excision [1,6]. We believe that despite the fact that there is no evidence to suggest that suprasternal dermoid cysts can become cancerous, they should be excised as early as possible, as their gradual expansion would eventually make surgery more dangerous.

Conclusion

Despite the rarity of group 4 suprasternal congenital dermoid cysts, they should be included in the differential diagnosis for suprasternal midline masses in pediatric cases.

References