Sternocleidomastoid Tumor of Infancy

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**HISTORY**

The mother of this 5-week-old girl reports that her baby's head tilts to the right. The mother was a primigravida; unremarkable pregnancy.

At birth, the presentation was breech. Baby delivered by forceps. Neonatal course otherwise uneventful.

**PHYSICAL EXAMINATION**

Firm, nontender mass noted within the right sternocleidomastoid muscle. Not fixed to the overlying skin. Baby's head tilts toward the right; chin rotates to the left. No limitation to passive movements of the neck. Physical findings otherwise normal.

Sternocleidomastoid tumor of infancy, also known as fibromatosis colli, is both the most common cause of neck mass in neonates and the most common cause of congenital torticollis.\(^1\,^2\)

The condition was first described by Heusinger in 1812.\(^3\)

**WHATS YOUR DIAGNOSIS?**

**EPIDEMIOLOGY**

The incidence is approximately 0.05% to 0.4% of live births.\(^1\,^4\) There is no predilection for sex or race.\(^5\,^6\) Sternocleidomastoid tumor is more common in infants born to primiparous mothers. Approximately 60% of affected infants have had a complicated birth.\(^7\)

The reported incidence of breech delivery in affected infants is much higher than usual (20% to 30%).\(^7\)

**ETIOLOGY**

The precise cause is not known. Birth trauma is a possibility.\(^6\) Birth trauma might result in muscle stretching and hematoma formation, which might be followed by fibrosis and muscle contraction.\(^6\)

However, a clinical hematoma is not present within the sternocleidomastoid muscle and hemosiderin is not present in pathological specimens.\(^5\,^8\)

Another popular hypothesis is that the tumor is the sequela of an intrauterine or perinatal compartment syndrome.\(^3\)

Since the tumor can develop following cesarean section and in association with other congenital lesions (such as hip dysplasia and talipes equinovarus), an intrauterine influence is considered operative in at least some cases.\(^1\,^3\)

The localized increase in pressure within the muscular compartment contained by the sternocleidomastoid fascia is thought to lead to focal ischemia and fibrosis. According to this hypothesis, prenatal fibrosis is responsible for the difficult delivery--rather than the consequence.\(^1\)

The main objection to this hypothesis is that a sternocleidomastoid tumor, although relatively common, has never been detected by antenatal ultrasonography.\(^9\)

Heredity might play a role in a small percentage of cases. Sternocleidomastoid tumor has been reported in twins and siblings.\(^8\)

In one study, 5 members in 3 generations were affected.\(^10\)

**CLINICAL MANIFESTATIONS**
A sternocleidomastoid tumor presents in the first few weeks of life as a firm, nontender, discrete, fusiform or spindle-shaped mass within the sternocleidomastoid muscle. The size varies from 1 to 3 cm in diameter. The mass is not fixed to the skin, and is movable in the horizontal plane. The tumor is usually found in the middle or inferior portions of the sternocleidomastoid muscle. Both heads of the sternocleidomastoid muscle are often affected, although involvement might be confined to either the sternal or clavicular head. There is a slight propensity for the lesion to be on the right side. Bilaterality is rare but has been reported.

**COMPLICATIONS**
The most common complication is torticollis. Shortening of the sternocleidomastoid muscle pulls the head toward the side of the lesion; this results in ipsilateral head tilt and contralateral chin deviation. Torticollis is aggravated by the inability of the affected muscle to grow normally and to keep pace with the normal muscle. The degree of torticollis is related to the ratio of the fibrosis to the remaining functional muscle. Other complications include restricted neck motion, plagiocephaly, and facial asymmetry. In general, the longer the sternocleidomastoid muscle remains shortened, the greater the cranial and facial asymmetry becomes.

**DIFFERENTIAL DIAGNOSIS**
The differential diagnosis includes branchial cleft cyst, dermoid cyst, ectopic thyroid, lymphadenopathy, cystic hygroma, branchial cleft cyst, lipoma, lymphangioma, hemangioma, sebaceous cyst, neuroblastoma, rhadomyosarcoma, and fibrosarcoma. Histopathology

On gross section, the tumor has a sparkling white color and a whorled appearance. Histologically, multinucleated giant cells consistent with degenerating skeletal muscle fibers are surrounded by spindle-shaped fibroblasts and collagen. Myoblasts in various stages of differentiation and degeneration are also found. No hemosiderin is present.

**DIAGNOSTIC STUDIES**
A clinical diagnosis can be established by palpation of the mass within the sternocleidomastoid muscle. Usually, no diagnostic test is necessary. If there is any doubt about the clinical diagnosis, the typical histology can be confirmed with a fine-needle aspiration of tissue. Ultrasonography and MRI can be used to demonstrate the fibrotic lesion within the sternocleidomastoid muscle.

**TREATMENT**
Up to 70% of sternocleidomastoid tumors resolve spontaneously without treatment. Cranial or facial asymmetry develops in 60% to 70% of patients who have a persistent tumor. Initial therapy consists of physiotherapy, with passive and active stretching of the sternocleidomastoid tumor on the affected side. Parents can provide this therapy at home. The success rate from physiotherapy ranges from 90% to 95%. Poor prognostic factors include the presence of facial asymmetry at diagnosis and limitation of neck rotation over 30 degrees. Surgical intervention is reserved for patients with a tumor or an associated contraction that persists beyond 1 year of age, and for those in whom craniofacial abnormalities develop. Multiple surgical procedures have been described. These include excision of the sternocleidomastoid tumor and surrounding muscle, and bipolar release of the sternocleidomastoid muscle with Z-plasty reconstruction of the muscle bulk.

**References:**


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