Exploring Sterno mastoid Tumor of Infancy: Role of Cytology

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Abstract: The sternomastoid "tumour" of infancy is a firm, fibrous mass that typically appears between two to three weeks of age. It is a recognized cause of congenital muscular torticollis, which may manifest with abnormal head and neck posture, craniofacial asymmetry, breastfeeding challenges, and impaired sensorineural outcomes. These masses are usually well-defined, firm, mobile, and fusiform, often located in the lower third or middle third portion of the sternocleidomastoid muscle. They are commonly and strongly associated with breech presentations and assisted deliveries. We present a case involving a 20-day- old male infant with a swelling on the right side of the neck, diagnosed cytologically and corroborated through radiological findings. This report highlights the classic cytological features of this condition to aid in distinguishing it from other neck swellings in infants of a similar age group.

Keywords: Congenital torticollis, Fibromatosis Colli, Fine needle aspiration cytology, Sternomastoid tumour of Infancy

Introduction: Sternomastoid tumour of infancy (SMTI) or Fibromatosis colli (FC) is a distinct type of perinatal fibromatosis characterized by the abnormal growth of a firm mass within the sternocleidomastoid (SCM) muscle in neonates[1]. The condition typically presents as a well-defined, firm, mobile, and fusiform mass located in the lower third or middle third portion of the SCM muscle[2]. This condition is more frequently seen on the right side than the left[3], and the condition is more prevalent in males than females[4]. It is usually identified during the second to fourth week of life[5]. Common risk factors are breech delivery, primiparous birth, and instrumental extraction[6], likely due to ischemic injury to the muscle. Approximately half of these cases regress spontaneously without long-term effects, but progressive torticollis or

the emergence of facial asymmetry may necessitate surgical intervention[7]. This report discusses a case of SMTI diagnosed through cytology, confirmed radiologically, and managed conservatively with massage and controlled neck stretching.

Case Report: A 20 days old male child delivered by forceps came to Paediatric OPD of our institute with complains of right sided neck swelling measuring approximately 03 X 02 cm. On clinical examination, it was firm to hard, mobile, non-tender, fusiform in shape and present at the anterior aspect of sternocleidomastoid muscle with restricted mobility [Figure 1].
There was no fever, trauma and no history of any other illness. USG of the right neck region revealed fusiform enlargement of the right sided sternocleidomastoid muscle measuring 3.28 X 1.38 cm without any internal vascularity, left sided muscle is not enlarged [Figure 2].
Fine needle aspiration (FNA) was advised and performed using 21 G needle and 10 ml syringe. Scanty material aspirated, smears were made and stained with May-Grunwald-Giemsa (MGG) stained and examined under microscope. Cytological examination revealed moderately cellular smears show predominantly oval-shaped cells with delicate, wispy cytoplasm and nuclei containing finely granular chromatin, along with small to medium-sized nucleoli [Figure 3]. Cells are arranged in small clusters and also appear singly. Degenerated, atrophic skeletal muscle with a few multinucleated giant cells and collagen fibres are also noted in clean background [Figure 4]. No mitoses, necrosis, haemorrhages or inflammatory cells are seen in the smears examined.

Discussion: Fibromatosis colli (FC) or Sternomastoid tumour of infancy (SMTI) is a congenital benign fibrous tumour originating from the sternocleidomastoid (SCM) muscle. It typically presents as neck swelling and restricted neck movement (torticollis). The characteristic finding is a solid, elongated mass with a firm to hard consistency located in the lower or middle third portion of the SCM, although it can occur anywhere along the muscle's length. The condition is more commonly observed on the right side and occurs more frequently in males. FC is usually identified between the second and fourth week of life[8], as seen in this case. Ultrasound is the preferred diagnostic modality, revealing focal or diffuse thickening of the SCM with either homogeneous or heterogeneous echotexture. Unlike other inflammatory or malignant neck masses[9], FC is not associated with cervical lymphadenopathy, vascular invasion, or bony involvement. This condition is linked to various congenital musculoskeletal abnormalities, including metatarsus adductus, developmental dysplasia of the hip, and talipes equinovarus[10]. Clinically, FC must be distinguished from other congenital or infantile neck lesions such as branchial cleft cysts and thyroglossal duct cysts, as well as inflammatory conditions like tuberculous lymphadenitis, benign tumours such as haemangioma, cystic hygroma, and lipoma, and malignant neoplasms like neuroblastoma, rhabdomyosarcoma, and lymphoma.

The cytomorphological characteristics of fibromatosis colli (FC) are distinctive, showing bland fibroblasts and degenerative, atrophied skeletal muscle fibers in a clear background, with no signs of inflammation or hemorrhage. The findings include numerous mature and immature looking skeletal muscle fibers, muscle giant cells, plump fibroblasts, collagen, and bland, bare nuclei dispersed in the background [11-13]. Cytologically, FC can be distinguished from nodular fasciitis by the latter's pleomorphic fibroblasts, bi- and multinucleated forms, and a myxoid background [14]. FC typically resolves spontaneously within the first year of life without requiring surgical intervention. However, late presentation (beyond one year of age), progressive torticollis, or the development of facial asymmetry may necessitate surgical management. Ultrasound is the diagnostic imaging modality of choice, revealing diffuse enlargement of the sternocleidomastoid muscle, predominantly involving the muscle belly, resulting in a fusiform or ellipsoid thickening, and shortening. This leads to a characteristic chin deviation away from the affected side [15].

Conclusion: FNAC is a safe, quick, cost-effective, and reliable outpatient procedure for diagnosis of sternocleidomastoid tumor of infancy (STMI) or Fibromatosis colli (FC). It provides rapid reassurance to parents and facilitates early conservative treatment. Thorough clinical evaluation, supported by radiological findings and minimally invasive techniques like FNAC, eliminates the need for biopsy and underscores the significance of conservative management for this self-limiting condition.

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Figure 1: Firm to hard, mobile, non-tender, fusiform in shape and present at the anterior aspect of sternocleidomastoid muscle

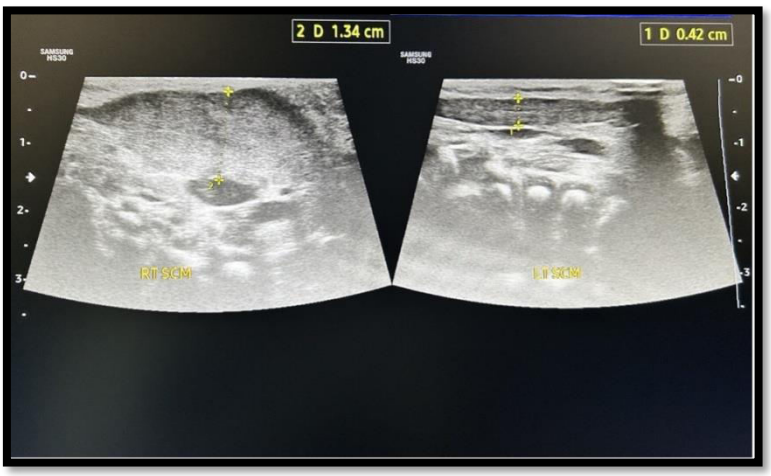

Figure 2 : Fusiform enlargement of the right sided sternocleidomastoid muscle

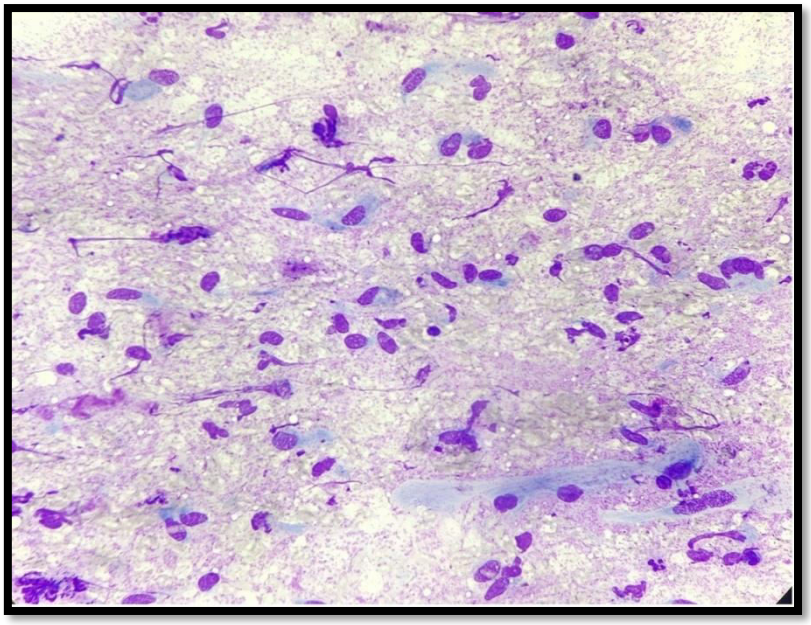

Figure 3: Cellular smears showing oval-shaped cells with delicate, wispy cytoplasm and nuclei containing finely granular chromatin. (X 40; Geimsa Stain)

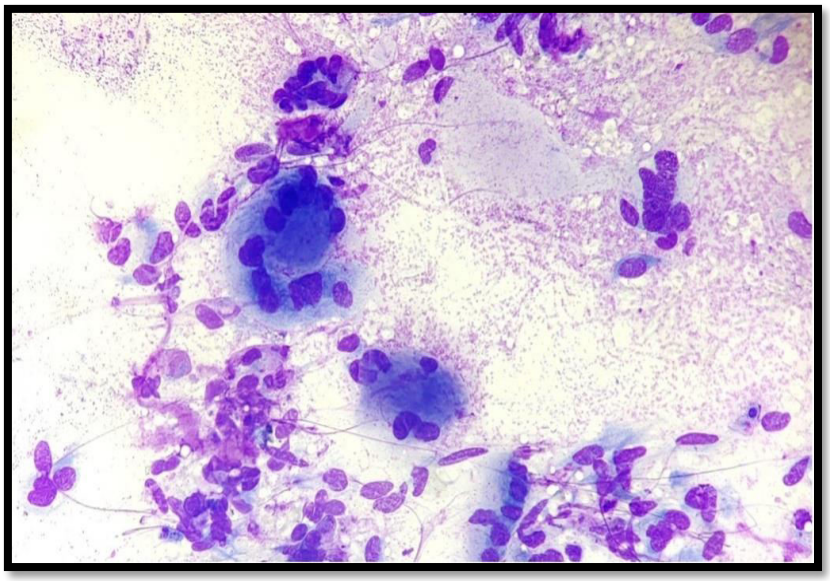

Figure 4: Skeletal muscle with a few multinucleated giant cells. (X 40; Geimsa Stain)