Brachial plexopathy due to chondrolipoangioma

Case report and review of the literature

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Chondrolipoangioma is a mesenchymoma primarily composed of cartilage, with adipose tissue and vascular elements present in lesser proportions. Chondrolipoangiomas have been reported to occur in the extremities, chest wall, oral soft tissues, mediastinum, uterus and its round ligament, seminal vesicles, and heart. In this report, the authors present an unusual case in which a chondrolipoangioma caused a brachial plexopathy. To their knowledge, a chondrolipoangioma has never been reported in the neurosurgical literature.

KEY WORDS • brachial plexopathy • chondrolipoangioma • mesenchymoma

BRACHIAL plexopathy most commonly occurs as a result of trauma and much more infrequently as a result of tumors. Benign and malignant nerve sheath tumors, such as neurofibroma and schwannoma, are the most common tumors to compress and/or infiltrate the brachial plexus, and breast carcinomas are the most frequent metastatic tumors to involve the brachial plexus. Lipomas account for the greatest number of benign non-nerve sheath tumors found in the brachial plexus. Chondrolipoangioma is a benign mesenchymoma composed predominantly of cartilage, with adipose tissue and vascular elements present in lesser proportions. Although cartilage-containing benign mesenchymomas are well known, there is a paucity of information specifically addressing the chondrolipoangioma.

Our report is the first of this rare tumor in the neurosurgical literature. We present the clinical, imaging, and histopathological features in a patient in whom a brachial plexus neuropathy developed secondary to a locally infiltrative chondrolipoangioma.

Case Report

History. This 27-year-old right-handed man without a significant medical history presented with left upper-extremity pain and paresthesias. A computerized tomography scan was ordered and it demonstrated a mass in the vicinity of the left brachial plexus. The patient was referred to our institution for further evaluation with the presumptive diagnosis of brachial plexopathy due to tumor.

Examination. Although no abnormality was identified on visual inspection, a firm, fixed, nontender mass was palpated in the left supraclavicular fossa. The patient was experiencing weakness in the left supraspinatus (Grade 4/5) and deltoid (Grade 4/5) muscles, and a slight weakness in the left biceps (Grade 4/5). The muscles in his wrist and hand exhibited normal strength. Sensory examination was notable for decreased pinprick over the lateral aspect of the left arm and shoulder. The patient’s reflexes were normal.

An MR image revealed a 4 × 6-cm solitary lesion in the left supraclavicular region, lateral to the left scalene muscle. The mass displaced, but did not lie within, the muscles of the involved area. The lesion appeared isointense with respect to muscle on T1-weighted images and there was minimal heterogeneity (Fig. 1 left). Images enhanced with gadolinium revealed a nonuniform pattern of enhancement of the lesion (Fig. 1 right). The imaging diagnosis was trauma-induced myositis ossificans or soft-tissue tumor.

Operation. By careful dissection, we were able to identify all elements of the brachial plexus and remove en bloc a mass measuring 8 × 10 cm (Fig. 2). Electrical stimulation and monitoring of nerve action potentials in the cords and trunks of the brachial plexus confirmed them to be well functioning. The diagnosis based on the examination of a frozen section of the lesion was myxoid fibrous tissue, possibly of soft tissue or nerve sheath origin, most likely benign.

Pathological Findings. Immunoperoxidase stains proved to be negative for myelin basic protein and positive for S100 protein and vimentin. Mucin stain, trichrome, reticulin, and elastic stains added nothing to a diagnosis. There were unusual changes such as a myxoid change in the
matrix and clear-cut chondroid differentiation. No features of malignancy were evident in the cartilage. The lesion was composed of fibroadipose, vascular, and chondroosseous tissues in a distinctive combination known as benign mesenchymoma and more specifically as chondrolipoangioma (Fig. 3).

Postoperative Course. At the 1-month follow-up examination, the patient’s complaints of pain and paresthesias had subsided and his weakness had resolved. An MR image obtained 12 months postoperatively demonstrated no evidence of recurrence, and the patient remained symptom and recurrence free at the 18-month follow-up examination.

Discussion
Mesenchymoma is a rare lesion infrequently reported in the English literature and, to our knowledge, never before in the neurosurgical literature. Mesenchymomas are defined as tumors that are composed of at least two mesenchymal elements not ordinarily found together in a tumor, excluding the fibrous tissue present in all mesenchymomas.10,12 Elements found in mesenchymomas include fat, blood vessels, smooth muscle, striated muscle, cartilage, myxomatous tissue, and lymphoid and hematopoietic tissue, among others, having varying degrees of differentiation. Benign and malignant mesenchymomas have been described.17 Benign mesenchymomas are usually well circumscribed, yet are not encapsulated; they tend to infiltrate soft tissues. They have been reported to occur in the extremities, chest wall, oral soft tissues, mediastinum, uterus and its round ligament, seminal vesicles, and heart.3,4,6,9,11

As suggested by its name, chondrolipoangioma is a mesenchymoma composed predominantly of cartilage, with adipose tissue and vascular elements present in lesser amounts. When Milchgrub and colleagues15 first used the term “chondrolipoangioma” in 1990 to describe three cases in which the extremities were involved, descriptions of cartilage-containing mesenchymomas were few. Since that time, there have been numerous reports of cartilage-containing mesenchymomas involving the tongue, nasopharynx, breast, and extremities.5,7,8,14

The differential diagnosis for brachial plexopathy is extensive and includes tumor (that is, Pancoast tumor), virus, radiation-induced lesion, diabetes, vasculitis, traumatic lesion, and idiopathic disease. Camerlingo, et al.,2 showed that 35% of patients who presented with a brachial plexopathy of unknown cause would be found to have cancer after a mean interval of 2 years.

The distinction between the malignant variation of mesenchymoma, which may metastasize or otherwise act aggressively,16 and the benign variation, which may recur and infiltrate locally, must be made.1,12 Although Stout

![Fig. 1. Left: Coronal T1-weighted MR image revealing a solitary mass in the supraclavicular region. Right: Gadolinium-enhanced image displaying a nonuniform pattern of enhancement consistent with the presence of multiple tissue types within the lesion.](image1)

![Fig. 2. Photograph of the tumor revealing its increased vascularity.](image2)
reported a 20% recurrence rate in his initial series of mesenchymomas, none of the chondroid-containing benign mesenchymomas documented to date, including the one harbored by our patient, showed evidence of recurrence or progression of disease.\textsuperscript{15}

Conclusions

We have presented the case of a 27-year-old man with a brachial plexopathy caused by chondrolipoangioma. The tumor was removed surgically and the patient is free from disease at 18 months. This histologically benign entity may be associated with significant morbidity because of its locally infiltrative growth. We suggest that the possibility of occult neoplasms should be ruled out in all patients with a brachial plexopathy of unknown cause. In the present case, potential morbidity was avoided by recognizing this lesion as a chondrolipoangioma, as opposed to something more sinister such as chondrosarcoma, which would have required a more radical resection.

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References


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