Journal of Peripheral Nerve Surgery (Volume 1, No.1, July 2017) 51-56

ORIGINAL ARTICLE

Approach to Brachial Plexus Tumors - Our Experience

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Abstract

Aims of this study: Our aim is to define a rationale approach in dealing with brachial plexus tumors, the investigations required and the best surgical approach to excise the tumour with least morbidity and to provide early functional recovery.

Methods and materials: We retrospectively reviewed the medical records of the nine patients with primary brachial plexus tumour treated in our institution between 2008 and 2015. Mean age was 34 (range 13 - 44) years at the time of presentation. All patients had preoperative MRI scans .

Results: All patients were evaluated clinically. Radiographs of the chest and MRI were taken to identify the lesion and the nerves involved. All the patients presented with pain as the principal symptom followed by swelling. All but one patient had single stage resection of the tumor. Three Patients had clavicular osteotomy. Microscopic resection was possible in eight out of the nine patients.

Conclusions: Benign lesions in which excision of tumour had done, needs no further intervention except for conditions in which nerve fascicles had been removed need secondary nerve transfers, nerve grafting or tendon transfers. Malignant tumours need subsequent radiotherapy with or without chemo therapy & once they were clinically recovered may need secondary procedures for their functional impairment.

Keywords: Brachial plexus tumour, Schwannoma, Neurofibroma

Introduction

Tumors involving the brachial plexus are rare and constitute about 5% of primary upper limb tumors. These tumors could be of nerve sheath origin (schwannoma), non-nerve sheath origin (neurofibroma). Benign schwannomas are the commonest peripheral nerve tumors and malignant transformation is extremely rare. Solitary neurofibromas are seen in about 10% of patients with neurofibromatosis.

Most cases of brachial plexus tumors reported in literature have been managed by neurosurgeons with all large series reported from neurosurgical specialty centres.[1,2,3] Schwannomas are derived from the myelinating cell of the peripheral nervous system and are composed almost entirely of Schwann cells. Schwannomas typically grow within a capsule that remains peripherally attached to the parent nerve. The tumor subsequently grows, eccentrically compressing the normal adjacent axons. Antoni A and B tissue types represent distinct histologic architectural patterns that aid in the pathologic diagnosis of schwannomas and may influence their imaging characteristics.[4] Type A tissue is highly cellular and demonstrates nuclear palisading and associated Verocay bodies, which may reflect their prominent extracellular matrix and secretion of laminin. The adhesive properties of laminin are thought to explain the tight organization within Antoni A tissue. Type B tissue is loosely organized with myxomatous and cystic changes and may represent degenerated Antoni A tissue (Fig 1). By contrast, neurofibromas appear to contain all the cellular elements of a peripheral nerve, including Schwann cells, fibroblasts, perineurial cells, and axons. The tumor cells grow diffusely within and along nerves, causing the nerves to expand radially while entrapping native neural elements within the substance of the tumor This intraneural growth pattern, with its entrapped axons, provides a key feature to histologically distinguish neurofibroma from schwannoma. Pain, swelling and loss of function are the reasons why patients seek treatment and the diagnosis though can be made clinically, if facilitated by the widespread use of MRI.[5]

We present nine cases of tumors involving the brachial plexus, all of which were surgically treated,to define a rationale approach in dealing with brachial plexus tumors, the investigations that are needed and the best surgical approach to excise the tumor with least morbidity and to provide early functional recovery.

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