Cervical Radiculopathy as the Inaugural Manifestation of Non-Hodgkin's Lymphoma of Rib

Dear Editor

Primary bone lymphoma accounts for less than 5% of all primary bone tumours and 4–5% of all extra-nodal lymphomas.[1] The majority of primary bone lymphomas are non-Hodgkin's lymphoma (NHL), of which diffuse large-B-cell lymphoma (DLBL) accounts for the most common histology. Long bones are most frequently involved. Involvement of flat bones is uncommon and isolated rib involvement is very rare.[2-5] Till now only 10 cases of primary Lymphoma of rib presenting as chest wall mass have been described. We report possibly the first case of primary NHL of 1st rib with extraosseous soft tissue mass at the cervicothoracic junction, encasing the brachial plexus and presenting as cervical radiculopathy.

An 85-year-old female patient presented to the neurology department with complaints of pain in left upper back radiating towards left arm since 3 months. She was also having tingling, numbness and weakness in the left upper limb. There was past history of mild hypertension, controlled with medications; there was no Diabetes or any history suggestive of Immunocompromise status. On examination, subtle wasting of left side palmer muscles and significant weakness in grasping was noted. Marked sensory loss was noted on the medial aspect of left forearm and hand.

She was referred to the Radiology Department for MRI of the cervical spine. MRI revealed a large mass in left paravertebral region at cervico-thoracic junction measuring 5.3 × 4.8 × 4.0 cm size in anteroposterior, transverse and craniocaudal dimensions respectively. The lesion was homogenous and hyperintense to muscles on T2WI and was isointense on T1 WI. There was associated altered marrow signal in the proximal part of left first rib [Figure 1a]. The soft tissue mass lesion encased roots and trunks of left brachial plexus [Figure 1b] and also showed foraminal extension at left C7-D1 level into epidural space [Figure 1c]. CT scan of the cervical spine was done to evaluate bony involvement. CT scan revealed lytic lesion in proximal part of left first rib with associated perpendicular periosteal reaction [Figure 1d]. CT of Chest and CT abdomen was done which showed no lymphadenopathy or organ involvement. MRI of Brain was also done which was unremarkable. Further evaluation with USG guided biopsy of the mass was done which revealed large lymphoid cells interspersed with reactive smaller lymphocytes and few histiocyte [Figure 2]. A diagnosis of NHL of DLBL subtype was made. PET Scan of the patient was planned, but could not be done due to financial reasons. The patient was planned for R-CHOP regimen three cycles in doses of intravenous rituximab 375 mg/m^2, cyclophosphamide 750 mg/m^2, vincristine 1.4 mg/m^2 and oral prednisilone 100 mg orally (for 5 days; to be followed by localized Radiotherapy 45 Gray (Gy) in 25 fractions.

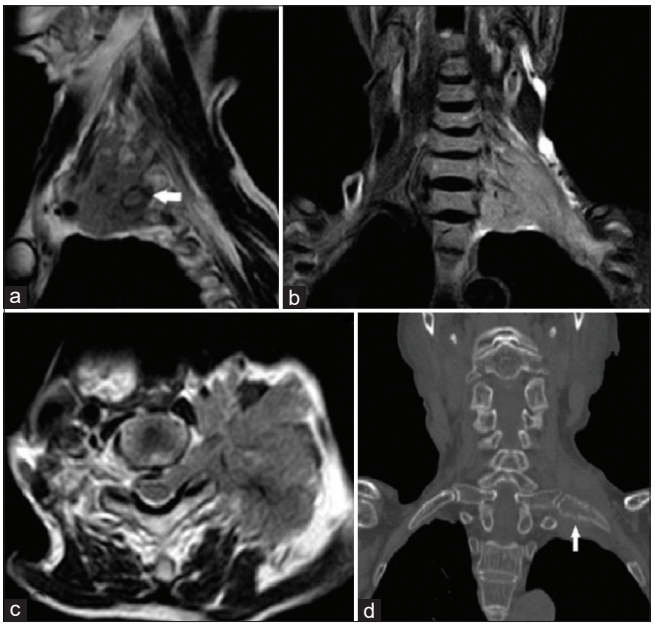

Figure 1: An 83 year old female. (a) Sagittal T2WI showing a homogenous iso to hyperintense mass lesion in left cervico-thoracic junction indenting left lung apex and altered signal intensity of 1st rib (solid white arrow). (b) Coronal STIR showing a hyperintense mass in left cervico-thoracic junction encasing left brachial plexus. (c) Axial T2 WI at C7-D1 disc level showing extradural extension of the mass via left C7-D1 foramen. (d) Coronal CT showing lytic lesion in proximal part of left 1st rib with perpendicular periosteal reaction (solid white arrow)

Cervical radiculopathy is a common clinical entity. The most common cause in old age group is age-related cervical spinal degenerative process. Other causes include trauma, infection, non-neoplastic lesions of cervicothoracic junction like cervical rib & subclavian artery aneurysm.

Primary tumours of the brachial plexus like neurofibroma, schwannoma and their malignant transformation can also result in mixed sensorimotor loss. Many malignant tumours of the cervicothoracic junction like Pancoast tumour and metastatic cervical lymphadenopathy are also known to cause cervical radiculopathy by the involvement of the brachial plexus.[6]

Lymphoma can cause cervical lymphadenopathy which in turn can compress/infiltrate brachial plexus. Primary bone lymphoma is in itself a rare clinical entity accounting for less than 5% of all the bone tumours of which the majority are of Non-Hodgkin's type.[7] According to the WHO criteria, a diagnosis of primary bone lymphoma must be made by (1) a single skeletal tumour, with or without regional lymph node

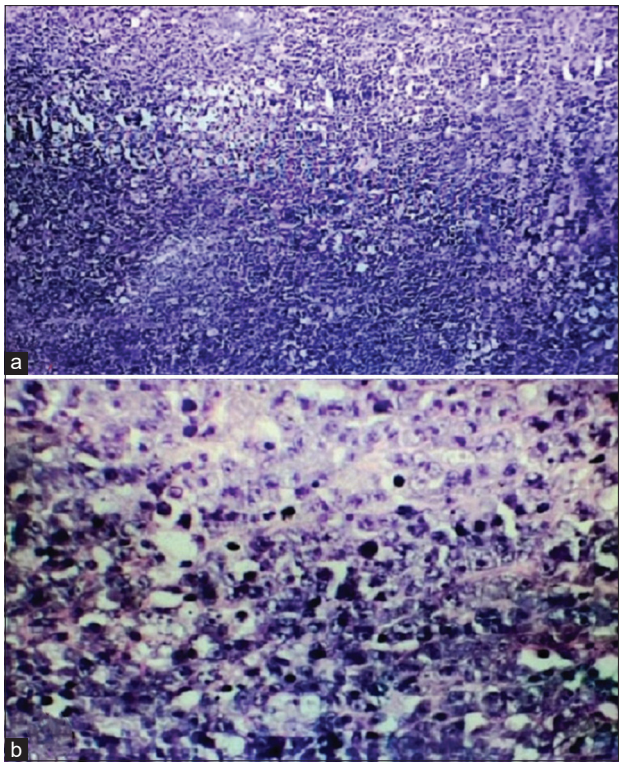

Figure 2: Sections from paravertebral soft tissue mass. (a) Low power view. (b) High power view, showing monotonous population of relatively large Lymphoid cells with prominent nucleoli and vesicular chromatin interspersed with reactive smaller lymphocytes and few histiocytes. Also seen are mitotic figures and areas of necrosis

involvement, and (2) multiple bone lesions without visceral or lymph node involvement.[8]

The radiographic appearance of primary bone lymphoma described in the literature varies from a near-normal-appearing bone to a focal lytic lesion, to a mixed sclerotic-lytic lesion and to a diffusely permeative process with cortical destruction, aggressive periosteal reaction & soft-tissue involvement.[9]

In our case, we found: (1) no regional/superficial lymphadenopathy present at the time of diagnosis; (2) brain, chest and abdominal radiological studies showed no other evidence of extranodal or nodal involvement (3) the complete blood count and differential count were within the normal limits; (4) the lesion was predominant in bone with associated extraosseous soft tissue mass, without enlargement of adjacent lymph nodes.

In our case, MRI of cervical spine revealed altered marrow signal intensity of the proximal part of the left 1st rib which on CT scan showed lytic destruction with perpendicular periosteal reaction. This lytic destructive pattern with cortical breakthrough and periosteal reaction has been described as the most common radiographic appearance of primary bone lymphoma.[9]

This case represents a case of primary osseous NHL of the 1st rib with an associated extra-osseous soft tissue paravertebral mass at the cervicothoracic junction encasing the brachial plexus and manifesting as cervical radiculopathy. The mass was indenting the underlying left lung apex with maintained fat planes with it, thus ruling out the possibility of Pancoast tumour. Biopsy of this paravertebral mass revealed histopathological features suggestive of DLBL subtype of NHL. This DLBL subtype has been described as the most common type of primary osseous lymphoma.[10]

Our case emphasizes the occurrence of cervical radiculopathy as presenting manifestation of primary osseous NHL of the rib. There have been many previous case reports of involvement of brachial plexus by neuro-lymphomatosis and manifesting as cervical radiculopathy.[11,12] This however refers to infiltration of the nerve by lymphomatous cells leading to severe nerve damage. In our case, there is encasement rather than infiltration of the nerve roots and trunks of the brachial plexus by lymphoma.

Till now, only few case reports have been described of NHL presenting as cervical radiculopathy. However, those were mostly primary lymphoma of the central nervous system or peripheral nervous system.[9,10] We present an unusual case of primary isolated NHL of the rib presenting as cervical radiculopathy. To the best of our knowledge, such case has not been reported previously.

Abbreviation

NHL: Non-Hodgkin's Lymphoma

DLBL: Diffuse Large B-cell Lymphoma

MRI: Magnetic Resonance Imaging

CT: Computed Tomography

WHO: World Health Organization

USG: Ultrasonography

Acknowledgement

Nil

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Submitted: 07-Jan-2021 **Revised:** 19-Jan-2021 **Accepted:** 26-Jan-2021
Published: 21-Apr-2021

DOI: 10.4103/aian.AIAN_5_21