Editorial

Tissue Diagnosis in Infective Spondylodiscitis by CT-Guided Spinal Biopsy: A Standard Practice before Starting Treatment

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The high incidence of infective spondylodiscitis in endemic Southeast Asia and Africa is a major growing concern. Infective spondylodiscitis usually presents with acute-to-chronic back pain and may lead to spinal deformity and neurological complications.[1]

Although radiological imaging has good predictive value for the diagnosis of infective spondylodiscitis, histopathological and microbiological confirmation and drug sensitivity testing of the samples obtained by image-guided or open surgical biopsy are always recommended, especially with the emergence of multidrug-resistant tuberculosis (TB) and extensively drug-resistant TB strains of *Mycobacterium tuberculosis* that are notoriously difficult to treat.[2]

Open surgical biopsy carries a significant risk of morbidity, the possibility of spillage or contamination of adjacent tissue planes, and postoperative complications. A percutaneous vertebral biopsy may be performed using fluoroscopy and computed tomography (CT). Compared with fluoroscopy, CT more precisely shows the needle position in intraosseous as well as extraosseous compartment and is potentially safer as there is less likelihood of injury to major vessels and nerve roots. CT-guided biopsy is widely used for tissue diagnosis in cases of infective spondylodiscitis, being a safe procedure with high diagnostic yield and low complication rate, and obviating the need for open surgical biopsy in the majority of cases.[3]

Ravichandran et al analyzed data of 259 patients who underwent CT-guided spinal biopsy for the evaluation of spondylodiscitis, out of which confirmatory diagnosis could be made for 149 (57.5%) biopsy specimens. Biopsy not only helped in confirming the diagnosis but also provided information about drug resistance and bacterial infection. These information help in initiating appropriate therapy and lead to a better outcome. The article nicely demonstrates the safety of the procedure and also provides a protocol for diagnosis and management. Though the article provides an excellent information and data highlighting the importance and safety of spinal biopsy in spondylodiscitis, it is imperative to provide readers with few simple but useful technical details that may help the operator to obtain a good sample for the diagnosis.[4]

The technical details needing elaboration are route for biopsy, trajectory of the needle, type of needle, and image guidance. The route of biopsy is one of the determinant factors for safe biopsy, for example, transpedicular route for lumbar, and costotransverse route for thoracic vertebral lesions. Navigation to the target, acquisition of tissue, and sampling for histopathology and microbiology are three basic steps of CT-guided vertebral biopsy. The target of biopsy can be vertebral body or endplate-disc complex, or can be paravertebral soft tissue. CT is an excellent imaging modality as it guides navigation through soft tissue as well as bone. The cranial and caudal angulation of needle to reach endplate of collapsed vertebrae may be challenging in axial scans of CT, However, tilting the gantry and navigating needle in sagittal reconstruction are options to overcome the angulation challenges. Fluoroscopy outnumbers CT in this aspect as real-time angulation of needle in sagittal plane is easier to appreciate and execute. Acquisition of tissue depends upon the matrix composition of lesion, for example, trephine biopsy for sclerotic lesion, and tru-cut biopsy for lytic lesion. However, navigation to lytic lesion often requires trephine biopsy needle and after reaching to the target, the cannula of trephine is used as coaxial for tru-cut needle to acquire tissue samples from the lytic lesion. Wide bore cannula of trephine needle is suitable conduit for aspiration

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of intraosseous abscesses. Careful detailed labelling of the container, sending the sample in 10% formalin for histopathology and in normal saline for microbiology, culture and CBNaat are essential steps of the biopsy that improve the outcome.[3–5]

To overcome the technical difficulties of CT-guided biopsies in infective spondylodiscitis, tram-track method of biopsy has been described in literature.[5] The acquisition of multiple samples of lytic lesion by tru-cut biopsy using coaxial technique leads to high positive yield as compared to trephine biopsy of the sclerotic lesion. The crush artefact has also been reported in trephine biopsy of sclerotic lesion. However, the number of tissue samples in sclerotic lesion by trephine biopsy can be increased using acquisition cradle, as described in literature. This also reduces the crush artefact of the sample. In paradiscal lesion, biopsy of endplate-disc complex demonstrates increased yield as compared to vertebral biopsy.[6]

One of the advantages of CT-guided vertebral biopsy in infective spondylodiscitis is the repletion of the procedure, in case of negative yield. The reported incidence of complication in the literature ranges from 0 to 10%, with serious complication rates being less than 1%.[7,8]

One of the common practices of endemic areas is to institute empirical anti-tubercular treatment (ATT) in suspected tuberculous spondylodiscitis. This practice should be discouraged, as it also leads to false-negative yield of biopsy and complicate the treatment in multidrug-resistant TB and extensively drug-resistant TB strains of *Mycobacterium tuberculosis*.[4]

CT-guided biopsy has been accepted as standard medical practice and gold standard for tissue diagnosis for the management of infective spondylodiscitis and should be universally practiced before starting treatment for this condition.

Conflict of Interest
None declared.

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