Sp8: Is a tissue biopsy required in all patients with typical MRI features of spinal tuberculosis, even in endemic areas for tuberculosis?

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Response/Recommendation: A tissue biopsy is advisable in all patients, despite typical MRI features of spinal tuberculosis, even in endemic areas for tuberculosis, based on current available evidence.

Level of Evidence: Moderate

Delegate Vote:

Rationale: The incidence of extrapulmonary TB is 3% of pulmonary TB. Skeletal TB occurs in 10% of patients of extrapulmonary TB. Of these, spinal involvement is sent in about 50% patients. In the spine, TB most commonly affects the thoracolumbar spine, followed by the lumbar spine and the cervical spine (1).

Optimal management of any infectious disease requires an aetiological diagnosis and isolation of the causative agent. The microscopic positivity in spinal TB is about 36% at best (2). Tuberculosis is endemic in a number of countries that are resource poor and where there is limited access to tertiary care facilities. In such conditions, medical treatment for spinal tuberculosis could be commenced earlier if it could be based on typical MRI features of spinal tuberculosis, supplemented by the clinical features and appropriate blood tests. The biggest challenge in spinal tuberculosis is identifying the disease early to reduce its severity and lower the incidence. Clinical history and examination may increase the suspicion; radiographic evaluations are frequently used to confirm the diagnosis. Empirical use of anti-tuberculous medication is commonly practiced as a practical alternative. However, this practice can lead to treatment failure in a subset of patients and lead to delayed treatment in multi-drug-resistant tuberculosis in many endemic countries (3, 4). Unfortunately, we did not find any study that has documented the result of management of spinal tuberculosis based on clinic-radiological features alone in our search of the available literature.

Magnetic resonance imaging is still the modality of choice. Contrast-enhanced Gadolinium MRI may delineate tuberculosis versus bacterial spondylodiscitis(5). The typical findings of MRI were well-defined paraspinal abnormal signals, the rims of the abscess are thin and smooth, intraosseous abscess, subligamentous spread to three or more levels, and hyperintense signal on T2 weighted images. These features presented a sensitivity of 100%, a specificity of 80%, and an accuracy of 90% (6). In addition, three MRI parameters, namely subligamentous spread, vertebral collapse of more than 50%, and large abscess collection with a thin abscess wall, are strongly predictive. The combination of these contributed to a higher predictive value of 97.5% (7).

In the clinical setting, it is difficult to differentiate tuberculosis and non-tuberculosis lesions based on clinical and MRI features alone (8). Presence of atypical features in spondylodiscitis, with lesions in the posterior arch of the vertebra can confuse the picture further. The “typical involvement” of spinal tuberculosis can also be seen in some metastasis, lymphoma, and other primary spine tumors (9). Unfortunately, a wide range of spinal pathologies may mimic Pott’s disease on MRI. Therefore, it is recommended to correlate the clinical and radiologic features with the laboratory results and histopathologic diagnosis to increase diagnostic accuracy (10, 11).

Unfortunately, there is a marked variation in assessment of the need for tissue biopsy. Surgeons and superspecialists were more inclined to biopsy these lesions compared to general

physicians. Thus, there is a need to create a consensus to support evidence-based practice (12).

Since tuberculosis produces paravertebral and epidural abscesses, it is not difficult to obtain an adequate sample for histopathologic and microbiologic diagnosis. This needle biopsy can either be done under fluoroscopic or computed tomographic guidance. Percutaneous transpedicular or posterolateral core needle biopsy is also a safe and accurate technique. The diagnostic yield of vertebral biopsy is higher than 62% (2). After the Mycobacterium tuberculosis has been isolated, it is recommended to study the sensitivity to address drug resistance to first-line treatment, especially in endemic areas. The proportion of multi-drug resistant tuberculosis is estimated to be about 3% in new cases and over 15% in previously treated patients (13).

Computerized tomography-guided biopsy remains the gold standard in diagnosing spinal tuberculosis (14). Despite this, inconclusive results will be seen in almost a quarter (24.2%) of patients undergoing CT guided biopsy due to inadequate samples, normal tissue, or just reactive tissue(15, 16). Xpert MTB/RIF Ultra, with a sensitivity of 95.6%, a specificity of 96.2%, and a positive predictive value of 95 %, should also be considered (1, 17). No single diagnostic modality can absolutely confirm the diagnosis. To clinch the diagnosis, it is imperative to incorporate the clinical findings and radiologic features, either the MRI or CT scans, substantiated by biopsy to identify the organism by a combination of staining, bacterial culture, histopathology and molecular studies (1).

Conclusion: Even when the clinical history and examination findings augmented by appropriate laboratory studies and typical MRI features are strongly suggestive of spinal tuberculosis, it is ideal to obtain microbiological or histopathological confirmation even in endemic areas, which can be achieved by tissue biopsy alone.

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