Image-guided spine biopsies: Reviewing practice, patient experience and outcomes.

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Indications, Approach & Technique

Indications
Spine biopsies are commonly indicated for patients with infection or vertebral lesions for which histological diagnosis is an essential aspect of patient management. Biopsy is especially useful when metastasis is suspected but the primary source is unknown.

Approach
Approach is dependent on lesion type and location. Common approaches to biopsy include but are not limited to:
- Transpedicular - popular for thoracic lesions.
- Transcostovertebral - useful for thoracic disc space lesions or paravertebral soft tissue masses.
- Posterolateral - commonly used in the lumbar region for laterally located lesions.

Technique
Computed Tomography (CT) is the preferred adjunct to spine biopsy. It is more accurate and produces fewer inadequate specimens. A coaxial needle system is preferred as it reduces the propensity for complications and allows for multiple passes to be taken, increasing the likelihood of achieving an adequate specimen.

Diagnostic Yield, Accuracy and Patient Outcomes

Several papers reviewing percutaneous biopsy of musculoskeletal lesions reported a diagnostic yield between 70%-82%. This is higher in patients with lytic lesions compared to sclerotic lesions. Yield is much lower in patients with infection at around 50% with a consensus of opinion that diagnostic yield is adversely affected by antibiotic regime commencement prior to biopsy, however there is evidence that antibiotic treatment prior to biopsy improves diagnostic yield. Several studies show a success rate of 89-97%, suggesting that despite the factors described, acquiring adequate specimens is easily achievable.

Sampling Adequacy
A retrospective study reviewing 170 CT-guided biopsies found no relationship between needle-size or needle approach and sampling success. Another paper comparing different bone biopsy needles in vitro found a variation in performance and quality of specimen, suggesting that the brand of needle may be an influencing factor. Several studies show a success rate of 89-97%, suggesting that despite the factors described, acquiring adequate specimens is easily achievable.

The Patient Experience

A 33 year old male presented with pyrexia and odynophagia and was found to have a nasopharyngeal tonsillar abscess and upper thoracic osteomyelitis. Initial pharyngeal biopsy results were negative so a CT-guided spinal biopsy undertaken to exclude tuberculosis. Two samples were collected and sent for histological and microbiological examination. These were negative for tuberculosis but confirmed the presence of high grade lymphoma.

This case highlights the need to consider patient experience. Local anaesthesia allows for a more cost-effective and quick procedure, but the procedure may still be painful and distressing for patients. The decision to undergo biopsy should include a discussion as to whether the diagnosis can be achieved by other means. In this case, a diagnosis of malignant lymphoma could have been reached through nasal biopsy alone, however due to the radiological findings spine biopsy was still necessary to exclude tuberculosis.