

Sp58: Does the morphology of the spinal infection (discitis/ spondylodiscitis/ epidural abscess/posterior infection) determine the planning of treatment and disease outcomes?

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Recommendation: Operative management is generally recommended in the setting of progressive neurologic deficits and/or mechanical instability. However, the morphology of spinal infections can guide treatment in the following ways. For isolated discitis, management recommendation is generally conservative with targeted antibiotics being the mainstay. Similarly, for spondylodiscitis, the initial treatment is largely conservative. This is typically a longer treatment course compared to isolated discitis and there is a higher likelihood of failure of nonoperative management. Spinal epidural abscess without neural compression can be treated conservatively. However, recent evidence suggests that these may benefit from early surgical intervention. Spinal epidural abscesses with concern for neurologic compression or with neurologic deficits should be treated surgically in an urgent manner. Posterior infections (facet joint, paravertebral, etc.) should generally be treated conservatively, except for rare cases that present with neurologic deficits or instability. There is a generally a lack of randomized controlled trials or other high-quality evidence regarding treatment algorithms for spinal infections. Further work is needed to provide stronger recommendations.

Strength of Recommendation: Moderate

Delegate Vote:

Rationale:

Spinal infection can present with a varied degree of involvement across numerous anatomically distinct spinal compartments. These include the intervertebral disc, vertebral body, facet joints, and the epidural and paravertebral regions [1]. There is currently substantial controversy regarding the treatment of spinal infections and a lack of standardized algorithms. However, the morphology and anatomic location of infection in the spine can influence both the decision between nonoperative and operative management and the choice of surgical approach. Additionally, the radical differences between the different spinal regions and the vulnerable neighboring anatomy can add complexity to this decision-making process.

Discitis

Management of discitis is controversial, as there is no expert consensus on the planning of treatment and disease outcomes. However, initial management of discitis is often conservative involving immediate initiation of broad-spectrum antibiotics [2]. Spine bracing may also be used but is typically less likely compared to patients with spondylodiscitis [3]. Once the causative agent is identified, 4-8 weeks of targeted antibiotics with immobilization by bed rest and brace should be utilized. In patients who fail in medical management by developing neurological deficits, spinal deformities, or refractory disease, surgical intervention with debridement and fusion should be considered [4].

Spondylodiscitis

Management of spondylodiscitis is controversial and follows similar pathways to the treatment of discitis but often requires more aggressive management due to the increased extent of disease. Huang et al. performed a systemic review and meta-analysis of 555 patients undergoing randomized-controlled trials and 3043 patients undergoing observational studies comparing short- and long-term courses of antibiotics for the treatment of osteomyelitis and found that a long course of 6 weeks or more was preferred in patients with high-risk vertebral osteomyelitis [5]. Most guidelines typically recommend a treatment duration of 6 to 12 weeks of antibiotic therapy [6,7]. Patients are more likely to require bracing in the treatment of spondylodiscitis compared to discitis [8]. Furthermore, patients with spondylodiscitis are more likely to fail conservative management than patients with discitis alone and require surgical intervention. Both open and endoscopic surgical techniques have been shown to be successful [9]. Giordan et al. performed a systemic review of 546 patients who underwent endoscopic minimally invasive surgery for thoracolumbar spondylodiscitis and found a success rate of 89.4% and revision rate of 8.5% [10].

There is also evidence that early surgical intervention may outperform conservative management in the treatment of pyogenic spondylodiscitis. Thavarajasingam et al. performed a systematic review and meta-analysis of 10,954 patients and found that early surgical intervention lowers risk of treatment failure, mortality rate, and reduction in hospital length of stay [11]. However, due to the overwhelming majority of the included studies being retrospective case series, it is difficult to draw conclusions based on these findings alone and a large multi-center randomized controlled trial would be needed to change current guidelines.

Epidural Abscess

Management of spinal epidural abscess (SEA) is highly studied but controversial in the current scientific literature. Although SEA was historically thought to require emergent surgical decompression, recent studies have also shown that conservative management may be a viable treatment option for SEA presenting without neurological deficit or spinal instability and improving infection [2]. However, surgical intervention with adjuvant antibiotics remains the optimal treatment for SEA patients presenting with neurological symptoms [3]. Suppiah et al. performed a systematic review on 1843 patients from 34 retrospective case series that showed high failure rates of initial medical management requiring surgery in 10% to 50% of cases and that early surgical intervention was the largest predictor of improved neurological outcome [3]. Vertebral discitis and spondylodiscitis may occur concurrently with SEA. Patients with isolated SEA may be adequately treated with urgent abscess evacuation without the addition of instrumentation [4,5]. However, in the setting of combined infection morphology, substantial bony destruction, or the need for extensive bony debridement, instrumentation should be considered to avoid spinal instability.

Posterior Element Infection - Pyogenic Facet Joint Infections

Management of isolated posterior element infection, including pyogenic facet joint infections, should primarily be guided by severity of patient symptoms rather than imaging results. Current research supports antibiotic therapy as the cornerstone of treatment for posterior spine infections. While the duration may vary, all patients should receive IV antibiotics during hospitalization, followed by oral antibiotics post-discharge for a total of 6-8 weeks. In select cases, serial MRI scans may help monitor treatment progression. Only in cases in which patients have persistent,

worsening, or severe neurological deficits or mechanical instability, surgical intervention may be necessary. Surgery is also indicated for facet infections complicated by epidural abscesses. The prognosis for pyogenic facet joint infections is generally favorable, with most patients making a full recovery and an estimated mortality rate of around 2% [6,7]. However, due to the rarity of isolated pyogenic infection of the posterior elements of the spine, the current literature about specific treatment recommendations for isolated posterior element spine infections is limited [8,9].

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