



KISSING SPINE DISEASE: A MISSING DIAGNOSIS IN LOW BACK PAIN CLINIC

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ABSTRACT

Baastrup's disease, also known as "kissing spine disease" or lumbar interspinous bursitis, is a degenerative condition causing enlargement, flattening, and reactive sclerosis of interspinous surfaces. It is primarily affecting the elderly, professional drivers, and college athletes. It worsens with spinal extension and is alleviated in flexion. The condition is often misdiagnosed due to lack of familiarity and overexposure to spinous processes on radiographs. It is characterized by excessive lordosis, repetitive stress on interspinous ligaments, and abnormal contact between spinous processes, often affecting the lumbar spine. Conservative treatments, particularly physical therapy and flexion exercises, have shown promise in managing this condition. A study by Maes et al. found no significant correlation between Baastrup's disease and lordosis, likely due to the use of supine MRI, which can display less lordosis than upright imaging. Another study noted pain relief in patients with partial contact of spinous processes following interspinous ligament injections, showing mixed imaging results but overall positive treatment outcomes. Additionally, PET/CT imaging has demonstrated F-18 fluorodeoxyglucose (FDG) uptake in adjacent spinous processes in cases of Baastrup's disease, further validating the condition's diagnosis. In a study involving 55 patients with Baastrup's disease, percutaneous injections of a corticosteroid and local anesthetic into the interspinous ligament resulted in a 22% rate of patients requiring follow-up injections within 7-10 days. There was notable pain reduction and improved ambulation reported. Surgical interventions, including bursa excision and spinous process removal, have limited evidence of effectiveness, with some surgeries failing to alleviate pain. Patients who had positive outcomes after spinous process resection often received prior diagnostic or therapeutic injections. Additionally, there are rare instances where Baastrup's disease leads to cyst formation in the interspinous region, which can result in neurogenic claudication, effectively resolved through the excision of the cyst and associated spinous processes.

KEYWORDS : baastrup's disease, kissing spine disease, low back pain, degeneration, bursitis, lumbar spine

Baastrup's disease, first identified by Danish radiologist Christian Baastrup in 1933, is also referred to as "kissing spine disease" or lumbar interspinous bursitis. It arises when the posterior aspects of the lumbar spine's spinous processes come into contact due to degenerative changes (figure 1). This condition results in the enlargement, flattening, and reactive sclerosis of the adjoining interspinous surfaces. Patients typically present with midline pain and tenderness, without any associated radiculopathy.

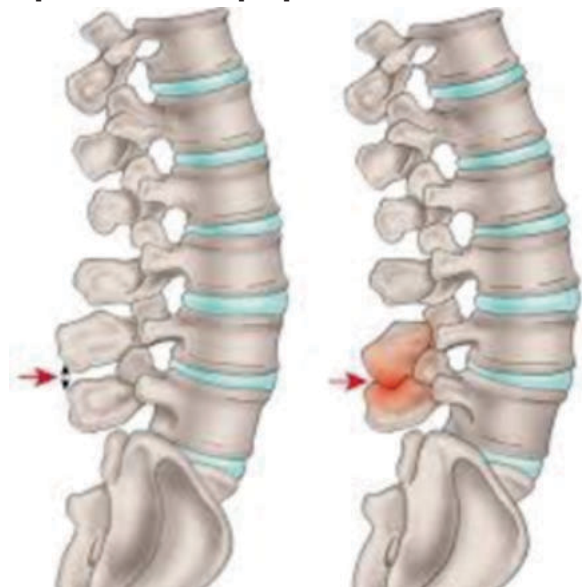


Figure 1: Lumbar Spinous Process Coming In Contact With Each Other Leading To Baastrup's Disease

Baastrup's disease often worsens with spinal extension and is alleviated in flexion, such as in the foetal position. As a degenerative condition, it predominantly affects the elderly,

with an incidence of 81.3% in individuals over the age of 80.(1) It has also been reported in 13% of professional drivers of heavy motor vehicles, most commonly affecting the L3-L5 levels.(2) In younger populations, the condition has been observed in 6.3% of college athletes, particularly gymnasts, likely due to repetitive spinal flexion and extension.(3) A study that classified Baastrup's disease based on the presence of a bursa between spinous processes visible on MRI found an overall incidence of 8.2% among patients experiencing back or leg pain.(4)

In 4.1% of patients, up to five spinal levels were found to be affected by Baastrup's disease, although a significant portion—35.4%—were affected at only one level. The condition most frequently occurs at the L4-L5 level and is commonly associated with older age, central canal stenosis, disc bulging, and anterolisthesis.(4)

Baastrup's disease is often misdiagnosed due to a lack of familiarity with the condition and the overexposure of spinous processes on plain radiographs.(5) Another challenge in accurate diagnosis is that dynamic flexion-extension imaging of the spine is rarely included in the standard evaluation for back pain. Typically, radiographs are taken in a neutral upright or supine position, while CT and MRI are mostly performed with the patient in a supine position. As a result, patients who exhibit symptoms primarily during spine extension might go unnoticed.

The lumbar vertebrae are the largest in the spine, increasing in size from top to bottom.(6) (7) The spinous processes in this region are thick, broad, and oriented in a caudal and dorsal direction.(8) This orientation can cause the spinous processes to come closer together with increased lordosis or during active hyperextension. The interspinous ligament, which connects adjacent spinous processes, plays a key role in preventing excessive spinal flexion by limiting the separation between these processes. It also helps control vertebral

rotation during flexion, working alongside the facet joints to provide stability. The supraspinous ligaments, attached to the tips of the spinous processes from C7 to L5, offer additional support to the interspinous ligaments by limiting spinal flexion and resisting the separation of adjacent spinous processes. Both the interspinous and supraspinous ligaments are sensory innervated, contributing to proprioception and protecting against excessive forces.(8)

Patients with Bastrup's disease may exhibit excessive lordosis, resulting in mechanical pressure that places repetitive stress on the interspinous ligaments and adjacent spinous processes. This can lead to degeneration of the interspinous ligaments.(9) The abnormal contact between adjacent spinous processes may also result in pseudoarthrosis and the formation of an adventitious bursa. In some cases, intraspinal cysts or bursitis may develop, with the bursa believed to form due to the creation of a synovial articulation, which can cause eburnation at the pathological joint.(10) A case report highlighted fractures of the spinous processes in two patients with Bastrup's disease, attributed to repetitive shearing forces.(11) While the condition most commonly affects the lumbar spine, particularly the L4-L5 vertebrae, a study of 77 cases by Nava and Seda identified 11 cases of cervical Bastrup's disease and three cases involving both the lumbar and cervical spine. (12) Elderly patients with degenerative spine disease and hyper lordosis of the lumbar spine are the most susceptible to developing Bastrup's disease.

The incidence of Bastrup's disease increases with age, peaking at 81.3% by the age of 80. Risk factors include excessive lordosis, which causes mechanical pressure and repetitive strain on the interspinous ligaments, as well as trauma and degenerative disc disease. The classic imaging feature of Bastrup's disease is the close approximation of adjacent spinous processes. However, this finding is often observed alongside spondylosis, degenerative disc disease, and facet hypertrophy, leading some experts to suggest that Bastrup's should be considered more of a "sign" rather than a disease—essentially a set of imaging findings associated with spinal degeneration.(13) (14) Our observations align with this view, as the abutment of spinous processes is frequently seen in patients with spondylosis. Intervertebral disc degeneration and the associated loss of disc height can bring adjacent spinous processes closer together (Figure 3), potentially leading to abutment during spinal extension and the development of reactive sclerosis and other degenerative changes.

While spondylosis, stenosis, and facet joint degeneration are the most common non-muscular primary causes of low back pain, it is important to consider spinal structures outside of the vertebral bodies when forming a differential diagnosis for back pain. Bastrup's disease should be suspected when back pain is relieved by flexion and worsened by extension. Dynamic imaging can aid in the diagnosis. Conservative management, including physical therapy and flexion exercises, has been reported as effective.(15) Interestingly, a study by Maes et al. found no significant association between Bastrup's disease and lordosis.

The study used supine MRI as its diagnostic criterion, which typically shows less lordosis compared to upright or dynamic imaging, potentially influencing the findings.

In a separate study, pain relief was achieved in patients who exhibited partial contact of the spinous processes during flexion/extension radiographs after receiving interspinous ligament lidocaine and dexamethasone injections.(16) In this group of 17 patients, only seven showed visible contact of the spinous processes on neutral position X-rays, while four demonstrated contact during extension. CT scans revealed

spinous process consolidation in nine patients, while the remaining eight showed no consolidation. MRI results were normal in 10 patients, with seven displaying T1 hypo intensity and T2 hyperintensity in the interspinous ligaments. Despite these varying imaging findings, 15 of the 17 patients reported satisfactory treatment outcomes, with two expressing willingness to undergo the same treatment again. One patient, however, experienced recurrent pain and eventually underwent resection of the affected spinous processes. Additionally, other studies have employed PET/CT imaging to accurately identify F-18 fluorodeoxyglucose (FDG) uptake between adjacent spinous processes in patients with Bastrup's disease, further supporting the diagnosis. (17) (18)



Figure 2: T2 Hyperintensity Seen At Spinous Process Junction

Iatrogenic Bastrup's syndrome has been reported in a cohort of patients following anterior lumbar surgery, suggesting that hyper lordosis may contribute to spinous process contact, inflammation, and bursa formation. In a series involving eight patients out of 855 who underwent an anterior lumbar approach, the average age was 51.5 years, and symptoms typically emerged 6.4 years after their most recent lumbar surgery.(19) All eight patients initially received diagnostic corticosteroid injections, which provided temporary relief. Subsequently, they underwent excision of the spinous processes, leading to the resolution of their symptoms.

Similarly, in a larger study of 55 patients with Bastrup's disease, participants received percutaneous injections of a long-acting corticosteroid combined with a local anaesthetic into the interspinous ligament between adjacent spinous processes. Twenty-two percent of the patients required a second injection within 7-10 days of the initial treatment. Overall, there was a reduction in pain and an improvement in ambulation among the patients.(20)

Surgical options for Bastrup's disease include excision of the bursa, partial or total removal of the spinous processes, or osteotomy.(21) However, evidence supporting the effectiveness of these surgical interventions is limited, as some excisions have not significantly alleviated pain. (22)Patients who experienced favourable outcomes after spinous process resection had typically undergone diagnostic or therapeutic injections prior to surgery. In rare cases, Bastrup's disease may involve the formation of a cyst in the interspinous region. One case report described a cyst in continuity with the epidural space, which led to neurogenic claudication. This condition resolved following the excision of both the cyst and the spinous processes.(23)

CONCLUSION

Bastrup's disease is a prevalent but often underdiagnosed condition that becomes more common with age. It can occur independently or alongside other spinal disorders, such as spondylolisthesis, spondylosis with osteophyte formation, and loss of disc height. The pain is typically midline and does not radiate to the extremities.

Iatrogenic Bastrup's disease has been observed following anterior lumbar approaches that lead to increased lordosis. Pain usually worsens with lumbar spine extension, is relieved by flexion, and is exacerbated by pressure applied at the affected level. Physicians should consider Bastrup's disease if a patient reports increasing back pain during spine extension and relief during flexion, particularly when MRI shows no spinal stenosis, spondylosis, or foraminal compression. In hyper lordotic patients, the spinous processes are more likely to come into contact. Dynamic flexion/extension radiographs can help evaluate the proximity of the spinous processes during extension.

Given its high prevalence in octogenarians, early identification and intervention are crucial for preventing further disability. Treatment options range from conservative physical therapy, aimed at reducing excessive lordosis through core muscle strengthening and improving hip flexor mobility, to interventional radiology and surgical procedures. Interspinous local anaesthesia is an effective diagnostic and therapeutic approach for managing Bastrup's disease.

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