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REVIEW ARTICLE

Olecranon bursitis

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Background: Bursitis is a common medical condition, and of all the bursae in the body, the olecranon bursa is one of the most frequently affected. Bursitis at this location can be acute or chronic in timing and septic or aseptic. Distinguishing between septic and aseptic bursitis can be difficult, and the current literature is not clear on the optimum length or route of antibiotic treatment for septic cases. The current literature was reviewed to clarify these points.

Methods: The reported data for olecranon bursitis were compiled from the current literature.

Results: The most common physical examination findings were tenderness (88% septic, 36% aseptic), erythema/cellulitis (83% septic, 27% aseptic), warmth (84% septic, 56% aseptic), report of trauma or evidence of a skin lesion (50% septic, 25% aseptic), and fever (38% septic, 0% aseptic). General laboratory data ranges were also summarized.

Conclusions: Distinguishing between septic and aseptic olecranon bursitis can be difficult because the physical and laboratory data overlap. Evidence for the optimum length and route of antibiotic treatment for septic cases also differs. In this review we have presented the current data of offending bacteria, frequency of key physical examination findings, ranges of reported laboratory data, and treatment practices so that clinicians might have a better guide for treatment.

Level of evidence: Narrative Review.

Keywords: Bursitis; olecranon bursitis; septic bursitis; aseptic bursitis; nonseptic bursitis; elbow bursitis

There are 3 types of inflammatory pathologies of the bursa (bursitides): acute, chronic, and septic. Acute bursitis usually results from direct trauma or prolonged pressure on the bursa.[26] If there are multiple acute episodes or if the patient is involved in occupational or recreational activities requiring prolonged pressure on the bursa, a chronic bursitis can develop.[26] Chronic bursitis is also frequently secondary to systemic disorders, for example, crystal deposition from gout or pseudogout and diseases such as rheumatoid arthritis.[49] Finally, septic bursitis is secondary to direct inoculation of the bursa through a skin wound or local spread from nearby cellulitis.[26] Hematogenous seeding of the bursa is extremely rare because the bursa has a poor blood supply.[4,15,30]

Anatomy

Bursae are closed fluid filled sacs with a synovial lining that facilitates gliding of musculoskeletal structures over one another during motion.[39,51] More than 150 bursae have been identified throughout the body.[30] These can be categorized into 3 groups: deep, superficial, and adventitious. Deep

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bursae are located between muscles or between muscle and bone[33,49] and develop in utero concurrently with synovial joints.[51] Superficial bursae appear to form in response to pressure and friction, over months or years after birth, and are found between bone and the overlying skin.[33,49,51] Adventitial bursae are acquired even later in life secondary to pressure over bony prominences or deformities.[51]

The olecranon bursa is a superficial bursa, and a cadaveric study showed that the olecranon bursa forms between the ages of 7 and 10 years.[9] The floor of the olecranon bursa lies on the triceps tendon and olecranon, and the roof is loosely connected to the overlying skin of the elbow (Fig. 1).

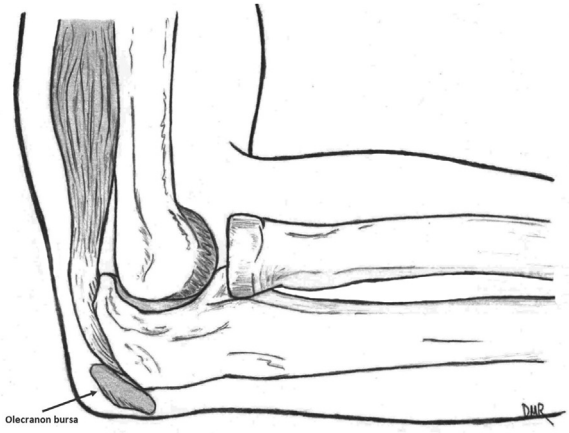

Figure 1 Illustration shows the location of the olecranon bursa and its proximity to the skin.

Epidemiology

The olecranon and prepatellar bursa are the most clinically relevant of the superficial bursae because they are predisposed to inflammation and infection given their locations.[30] The actual incidence of olecranon bursitis is unknown and difficult to quantify. It has been estimated to be between 0.01% and 0.1% of hospital admissions.[30] One reason olecranon bursitis is difficult to measure is that most studies are done in hospital-based systems, and many patients with milder cases are treated successfully in the community setting or as outpatients by primary care offices.[15,27] Another reason is that chronic idiopathic olecranon bursitis can be mild enough that patients do not seek medical attention, and these cases are often diagnosed when the patient has elbow surgery for other reasons.[16]

A prospective study by Smith et al[43] found that olecranon bursitis was diagnosed in 3 of every 1000 emergency or outpatient visits at their institution and that 1 of every 3 to 4 cases was septic. Ho and Tice[19] studied men presenting to a Veterans Administration medical center and found olecranon bursitis was more common than prepatellar bursitis, with an approximate ratio of 4:1 in this population.

Septic bursitis is traditionally thought of as a condition of young to middle-aged men involved in manual labor, related specifically to direct traumatic inoculation.[20] All published studies have had a male predominance, with a reported female occurrence of 0% to 13%.[7,20,27,38] However, a study from rural Spain reported an increased female occurrence of 17.3%, which was most likely due to the increased number of women involved in manual labor in the rural setting.[15] One study also found a seasonal distribution of septic olecranon bursitis that peaked in the summer months, perhaps secondary to an increase in outdoor activities or labor, or both.[27] This illustrates that involvement in manual labor or other predisposing activities is likely more important than gender as a risk factor for the development of septic olecranon bursitis.

Etiology

Trauma

There are two main causes of olecranon bursitis, the most common being traumatic.[8,15] Trauma to the olecranon can lead to septic or noninfective bursitis. Patients with septic or nonseptic bursitis report antecedent trauma to the affected elbow between 33% and 77% of the time.[35,45,51] However, septic bursitis is almost always preceded by some kind of trauma. Minor trauma and sometimes repetitive microtrauma are enough to allow bacterial invasion of the bursa.[45] Septic olecranon bursitis is therefore an occupational hazard of those involved in manual labor such as plumbers, miners, gardeners, mechanics, and athletes.[30,37] Larson and Osternig[26] noted an increase in the number of cases of olecranon bursitis after the installation of artificial turf in football arenas, which may be accounted for by the relative abrasive nature of the artificial surface compared with grass.

Associated medical conditions

The second major reason patients develop olecranon bursitis is secondary to a pre-existing systemic medical condition. Development of bursitis is directly due to the comorbidity or secondary to immunosuppression caused by the treatment of it.[4] As with traumatic injuries, these conditions can lead to septic, noninfective, or chronic bursitis. The reported rate of at least 1 comorbidity varies in the literature from 33% to 74%.[27,38] A small study by Canoso and Sheckman[7] evaluated 16 patients with bursitis, 12 of which involved the olecranon, and all but 1 patient had a comorbid condition.

Common comorbid conditions that have a direct association with olecranon bursitis are diabetes, alcoholism, immunosuppression from chronic steroid therapy, psoriasis, HIV infection, crystalline diseases, such as gout and pseudogout, and rheumatoid arthritis (Fig. 2).[4,5,7,20,36,45,51]