World Journal of Surgery and Surgical Research

Case Report
Published: 11 Apr, 2020

Unusual Presentation of a Ganglionic Cyst in the Posterior Shoulder: A Case Report

Tanios M, Andrews K, Stokey P, Stirton J, Chen E and Ebraheim N*

Department of Orthopedic Surgery, University of Toledo College of Medicine and Life Sciences, USA

Abstract

Shoulder pain is among the top reasons for visiting an orthopedic surgeon in the United States. With several common etiologies, shoulder pathology is often a straight forward diagnosis. Unfortunately, rare causes can be mistaken for pre-existing disease. Ganglions are well known to occur in the dorsum of the hands, the wrists, and knees, but have rarely been reported in the literature at other areas such as the shoulder. Here we report the unique case of a 68-year-old Caucasian male who presented with nonspecific symptoms of right shoulder pain and swelling with a large cystic mass. CT-guided aspiration resulted in significant reduction of cyst size and symptomatic improvement. Growing evidence indicates that ganglionic cysts should be considered in the differential diagnosis of shoulder pathology. Unfortunately, the etiology of ganglionic cysts remains unclear and the diagnosis requires clinical and radiologic assessment. The invention and now widespread use of MRI has enabled imaging of soft tissue masses including these ganglions, and can show structural involvement of the mass. While conservative medical management is often used, it carries a significant likelihood for recurrence. Ultrasound or CT-guided aspiration has now emerged as a viable option for therapeutic intervention.

Keywords: Ganglion cyst; Shoulder pain; Histology; Mass; Recurrence

Introduction

Ganglion cysts are mucoid, connective tissue masses that are composed of spindle cells [1]. They can occur near nerves, bones, tendons, and muscles. The pathogenesis may be related to the collection and subsequent entrapment of synovial fluid into the surrounding structures *via* a labral tear [2]. Ganglionic cysts, while commonly seen at the wrist, are relatively rare in the shoulder. When they do occur in the shoulder, ganglion cysts often present with suprascapular nerve entrapment resulting in pain, weakness, and atrophy of the supraspinatus and infraspinatus muscles [3]. They may originate from adjacent soft tissues or even intra-osseously from the glenoid [4]. This may lead to significant pain and decreased shoulder range of motion. Often going unnoticed clinically, these ganglions are overlooked in the differential diagnosis in favor of more common etiologies such as rotator cuff tears. It has also been suggested that a SLAP injury may be concomitantly present with such ganglion cysts.

With the advent of MRI technology, the detection of paralabral ganglion cysts has been improved. In this study, we report the case of a ganglion cyst in the posterior shoulder, leading to a mass with chronic pain symptoms and decreased range of motion. The clinical picture, workup, and treatment intervention is presented.

Case Presentation

The patient is a 68-year-old Caucasian man who originally presented with a chief complaint of swelling and pain in his right shoulder which had been ongoing for several months. He did not have any knowledge of a clear inciting event. There was dull pain to palpation in the shoulder, but the patient had not tried medications or physical therapy to treat his symptoms. He denied having any weakness and was still able to perform his normal daily activities. However, as the swelling in his shoulder had persisted for some time, the patient ultimately decided to seek medical advice. The patient's primary care physician aspirated the shoulder at two consecutive visits, but the procedures failed to provide relief to the patient, at which point the patient was referred to the orthopedic clinic. The patient's past medical history was significant for a known prior full thickness rotator cuff tear of the right shoulder, a prior dislocation of the right shoulder, degenerative joint disease, multiple benign skin neoplasms, ganglion and cyst of the synovium, tendon, and bursa, and stage 3 chronic

OPEN ACCESS

Correspondence:
Phillip Stokey, Department of Orthopedic Surgery, University of Toledo College of Medicine and Life Sciences, 3000 Arlington Ave, Toledo, OH 43614, USA;
E-mail: Phillip.Stokey@utoledo.edu

Received Date: *22 Mar 2020*
Accepted Date: *09 Apr 2020*
Published Date: *11 Apr 2020*

Citation:
Tanios M, Andrews K, Stokey P, Stirton J, Chen E, Ebraheim N. Unusual Presentation of a Ganglionic Cyst in the Posterior Shoulder: A Case Report. World J Surg Surgical Res. 2020; 3: 1218.

Figure 1a, 1b: Clinical photographs of mass upon patient presentation.

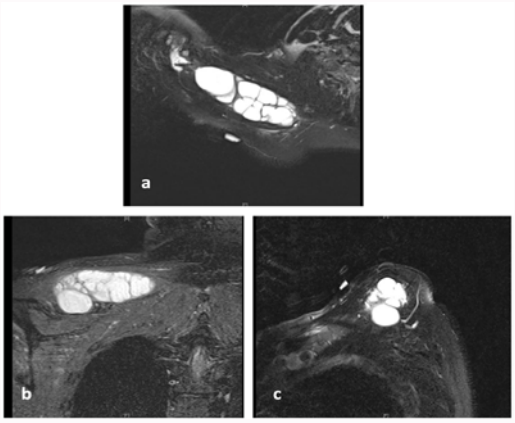

Figure 2a-2c: Axial, coronal, and sagittal MRI images of the chest without contrast, respectively. Shows large, loculated, T2-enhancing mass over the right posterior shoulder region.

kidney disease post-renal transplant. He also had several chronic conditions including hypertension, hyperlipidemia, and diabetes mellitus type 2. There was no significant family history. The patient was a former smoker of 20 pack years. He denied any illicit drug use.

On exam, the patient was a well appearing male in no acute distress. Inspection of his shoulder showed an approximately 10 cm by 10 cm cystic-appearing lesion on the posterior aspect of the right shoulder, immediately superior to the supraspinatus tendon (Figure 1a and 1b). Range of motion showed complete flexion, extension, adduction, abduction, and internal and external rotation; however, the patient experienced the previously mentioned pain on passive flexion and extension of the joint. Due to the failure of previous treatment, the position of the lesion, the patient's extensive past medical history, and the insidious onset of the lesion, a malignant process was initially suspected. MRI of the right chest without contrast (Figure 2a-2c) and ultrasound of the mass (Figure 3) were obtained for further evaluation. A CT-guided aspiration with pathological analysis was then ordered. After the standard sterilization of the area, an 18 gauge needle was inserted using a posterior approach and 140 mL of sanguineous fluid was aspirated and sent to the laboratory (Figure 4 and 5). There were no complications or adverse reactions to the procedure. The ensuing pathology report was consistent with a ganglion cyst, and subsequent visits to the outpatient clinic showed significant decrease in the size of the lesion with symptomatic improvement. Upon follow up visits, the patient felt that the mass diminished in size to 6 cm × 6 cm at 6 weeks, and decreased further to 4 cm × 4 cm at 10 weeks with no additional therapy. No adverse events were noted that would suggest a more malignant pathology, and therefore a plan for continued monitoring was established.

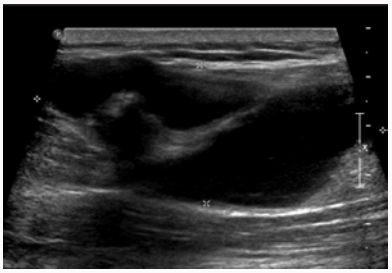

Figure 3: Ultrasound imaging (sagittal view), demonstrates large, hypoechoic, loculated mass.

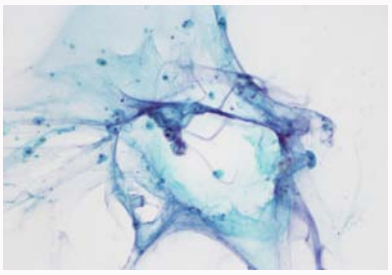

Figure 4: Synovial fluid histological analysis. Medium power view of hypocellular synovial fluid containing scattered macrophages, a few red blood cells, lymphocytes, and sparse synovial cells. Thin Prep: Original magnification x10.

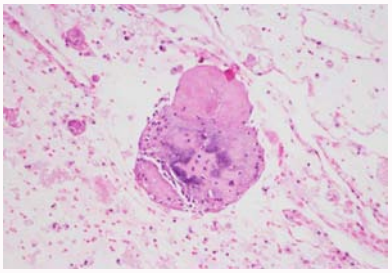

Figure 5: H&E stain of specimen. High power view of the cell block demonstrating a bland tissue fragment with a centrally located calcification in a background of synovial lining cells and blood. Hematoxylin and eosin: original magnification x40.

Discussion

Ganglionic cysts are benign masses filled with myxoid matrix that most commonly affect the dorsum of the wrist (70% to 80%), but also are known to affect the hand and the lower extremities near the knee or foot [5]. They may occur within muscles and tendons; in the knee, the menisci and ligaments may be involved. Generally, these masses have no specific symptoms. However, they have been known to cause nerve compression leading to significant neurological deficits, pain, local swelling at the site of the mass, and impaired joint function [7-11]. Although the specific etiology of ganglion formation is unknown, the most widely accepted theory is that herniation of a portion of the joint capsule or tendon sheath results in a fluid filled cystic pocket, creating a one-way valve preventing drainage [5,6]. Unfortunately, histological analysis of the ganglion matrix does not fully support this theory, as the fluid is biochemically different and more gelatinous compared to synovial fluid. Other possibilities have therefore been proposed to explain the ganglion formation, including repeated trauma or stress of the joint, mucoid degeneration of connective tissue, and increased mucin production by mesenchymal cells.

However, these theories all lead to the development of the cystic area first with later connection established to the joint space *via* pedicle formation [6].

Diagnosis of a ganglionic cyst is generally made by inspection and palpation of the mass. Because the classical history of this lesion is well known and established, a mass in the dorsum of the hand or wrist can often be clinically identified; radiographs and ultrasound imaging are then used to rule out other possible causes such as intra-articular loose bodies. In addition to radiographic imaging, MRI is the preferred technique due to its superior sensitivity, specificity, and accuracy for cystic masses; it also can identify soft tissue masses that would suggest a neoplastic mass.

Unfortunately, due to the relatively low incidence (2% to 4%) of ganglions at the shoulder, the clinical features are not as well established compared to those cysts occurring in the wrist [7]. A review of the literature shows that these lesions, when symptomatic, generally cause a mass effect impinging upon local structures which results in pain, muscle weakness, and decreased range of motion of the shoulder and even biceps tendon [10]. Furthermore, several case reports have noted chronic suprascapular nerve compression leading to progressive weakness of the supraspinatus muscle and infraspinatus muscle [8,9]. Even rarer, acute presentations of nerve impingement secondary to ganglion cyst compression have been reported [11]. The increasingly widespread use of MRI has enabled a more accurate evaluation by allowing for the observation of atrophy of affected muscles of the shoulder girdle, and providing further information on the extent of the cystic mass. This imaging is especially important when planning for surgical interventions. Should muscle weakness be present, an EMG can also be used to assess denervation of the rotator cuff muscles which may suggest the specific area of nerve compression [12]. However, the diagnosis of a ganglion can easily be confounded by more common pathologies. Ji et al. [7] noted that glenoid cysts may be misdiagnosed as rotator cuff disease, SLAP lesions, impingement syndrome, and osteoarthritis among other etiologies.

The mainstay of treatment ranges from medical management to more invasive procedures, depending on the severity of symptoms. Rehabilitation of the shoulder can be attempted to restore function and range of motion, especially if the deficits are mild [6]. However, should the patient fail conservative treatments, appropriate steps generally begin with aspiration of the fluid-providing decompression and symptomatic relief. As mentioned previously, the gelatinous nature of the fluid can persist in the joint area and prevent complete resolution of symptoms with recurrence following aspiration.

Traditionally, surgery has been the definitive treatment of ganglion cysts. The accepted curative treatment for ganglion cysts is arthroscopic *vs.* open surgical excision with postoperative MRI to verify the success of the procedure. It should be noted that arthroscopy is preferred due to the invasive nature of an open approach and improved shoulder rehabilitation [6,12]. However, with modern imaging techniques, guided aspiration is now possible. These techniques are particularly useful for accessing deep structures in difficult locations, such as ganglion cysts in close proximity to the shoulder joint or suprascapular nerve. Although we chose to aspirate under CT guidance, high resolution ultrasound may provide a comparably accurate and more cost-effective method for ganglion cysts in superficial locations [13].

References

1. Sakamoto Y, Kido A, Inoue K, Tanaka Y. Gas-Containing paralabral ganglion cyst of the shoulder: A case report. JBJS Case Connect. 2015;5(2):e42.
2. Kessler MA, Stoffel K, Oswald A, Stutz G, Gaechter A. The SLAP lesion as a reason for glenolabral cysts: A report of five cases and review of the literature. Arch Orthop Trauma Surg. 2007;127(4):287-92.
3. Kim JR, Wang SI. Suprascapular nerve entrapment caused by an intraosseous ganglion of the scapula: A case report. Medicine (Baltimore). 2017;96(24):e7167.
4. Ishimaru D, Nagano A, Terabayashi N, Nishimoto Y, Akiyama H. Suprascapular nerve entrapment caused by protrusion of an intraosseous ganglion of the glenoid into the spinoglenoid notch: A rare cause of posterior shoulder pain. Case Rep Orthop. 2017;2017:1704697.
5. Gude W, Morelli V. Ganglion cysts of the wrist: Pathophysiology, clinical picture, and management. Curr Rev Musculoskelet Med. 2008;1(3-4):205-11.
6. Bontempo NA, Weiss AP. Arthroscopic excision of ganglion cysts. Hand Clin. 2014;30(1):71-5.
7. Ji JH, Shafi M, Lee YS, Kim DJ. Inferior paralabral ganglion cyst of the shoulder with labral tear -- a rare cause of shoulder pain. Orthop Traumatol Surg Res. 2012;98(2):193-8.
8. Neviaser TJ, Ain BR, Neviaser RJ. Suprascapular nerve denervation secondary to attenuation by a ganglionic cyst. J Bone Joint Surg Am. 1986;68(4):627-8.
9. Moore TP, Fritts HM, Quick DC, Buss DD. Suprascapular nerve entrapment caused by supraglenoid cyst compression. J Shoulder Elbow Surg. 1997;6(5):455-62.
10. Saremi H, Yavarika A, Karbalaeikhani A. Intra-articular ganglion cyst of the long head of the biceps tendon originating from the intertubercular groove. Arch Bone Jt Surg, 2014;2(3):232-3.
11. Wong P, Bertouch J, Murrell G, Hersch M, Youssef P. An unusual cause of shoulder pain. Ann Rheum Dis. 1999;58(5):264-5.
12. Westerheide KJ, Karzel RP. Ganglion cysts of the shoulder: technique of arthroscopic decompression and fixation of associated type II superior labral anterior to posterior lesions. Orthop Clin North Am. 2003;34(4):521-8.
13. Hashimoto BE, Hayes AS, Ager JD. Sonographic diagnosis and treatment of ganglion cysts causing suprascapular nerve entrapment. J Ultrasound Med. 1994;13(9):671-4.