Determining the Relationship of Right Shoulder Pain with Gallbladder Disorders

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Abstract

Aim

The aim of this study was to determine whether any pathology regarding underlying gallbladder disorders was present in patients presenting to the outpatient department with right shoulder pain.

Material and Methods

A total of 1215 patients who presented to the Kafkas University Faculty of Medicine's Orthopedic Outpatient Department between January 2012 and December 2017 with right shoulder pain were included in this study. There were a total of 1215 patients visiting the Orthopedic Outpatients during this period and the 405 patients with right shoulder or scapular region pain were referred to the General Surgery Outpatients for the relevant tests, followed by selection of the patients with gallbladder problems. The demographic information, symptoms, physical examination findings, laboratory findings, and ultrasound and magnetic resonance imaging results of the patients were evaluated. We also evaluated in detail the histopathology results of the specimens removed from the patients that needed surgery following these evaluations.

Results

Pain radiating to the right shoulder was present in 405 of the 1251 patients presenting to the Orthopedic Outpatients with shoulder pain in this study. Abdominal ultrasonography of the 405 patients revealed gallbladder-related findings in 132 patients. This group consisted of 109 (82.5%) females and 23 (17.5%) males. Ultrasonography revealed normal gallbladder size and wall thickness with stone within the gallbladder in 86, and increased gallbladder size and wall thickness in 48. All these patients underwent surgery. Postoperatively, 4 experienced bile leak, 2 severe bleeding and 3 abdominal evisceration.

Conclusion

There are many reasons for shoulder pain. The treatment should be directed at the cause in these patients.

Keywords

Shoulder Pain; Gallbladder; Cholecystitis; Referred Pain

Introduction

Gallstones are one of the most common medical problems. They can cause acute or chronic cholecystitis and result in surgery. Approximately 500,000 cholecystectomies are performed each year in the United States. The incidence of this disorder increases with age and is twice as high in females than males [1, 2]. There may be pain radiating to the right scapula region and the
right shoulder together with right upper quadrant pain in these patients [3]. It is therefore important to obtain a detailed history from patients presenting with shoulder pain and determine treatment after pinpointing the underlying disorder by taking the physical examination findings, laboratory test results and the results of any consultations as necessary into account.

We aimed to evaluate whether there was an underlying gallbladder-related pathology in patients presenting to Orthopedic Out patients with right shoulder pain in this study.

Material and Methods

A total of 1215 patients who presented to the Kafkas University Faculty of Medicine's Orthopedic Outpatient Department between January 2012 and December 2017 with right shoulder pain were included in this study. The 405 patients with right shoulder or scapular pain from the 1215 patients presenting to the Orthopedic Outpatients during this period were referred to the general surgery outpatients department. The relevant tests were performed and patients with a gallbladder-related pathology were determined. The demographic information, symptoms, physical examination findings, laboratory results and ultrasound and magnetic resonance (MR) imaging of these patients were evaluated. The histopathology results of the specimens removed from patients undergoing surgery were also evaluated in detail.

Statistical analyses were performed with the SPSS (Statistical Package for Social Sciences) for Windows 22.0 software. Percentages were used for categorical variables. The Mann-Whitney U test and independent t-test were used to compare numerical variables while the Chi square test and Fisher's exact test were used for categorical variables. A p value <0.05 was considered statistically significant for all comparisons.

Results

A total of 405 patients had pain radiating to the right shoulder out of the 1215 patients who presented to the Orthopedics Outpatients with shoulder pain. Following an orthopedic examination, patients whose clinical findings, laboratory test results and ultrasonography (of the shoulder) and MR investigations for pain that radiated to the right shoulder and right scapular region did not support impingement syndromes, rotator cuff pathologies or cervicothoracic vertebra and disc pathology, and who had no history of trauma and had not previously received a diagnosis related to rheumatologic disorders or psychosomatic pain were referred to the General Surgery Outpatients. The abdominal ultrasonography of the 405 patients revealed a gallbladder-related pathology in 132 patients consisting of 109 (82.5%) females and 23 (17.5%) males. Right superior quadrant pain was accompanied by pain radiating to the right shoulder in 95 patients while 37 patients had dyspeptic symptoms together with right shoulder and scapular region pain. The mean age of the patients was 40+/−8 years. The mean laboratory values at presentation were WBC:7542 +/-2780 /mm³, ALT:25 IU/L (n:15-35), AST:23 IU/L(n:16-30), GGT:29 IU/L (n:17-66), and ALP:82 IU/L (n:63-116). Ultrasonography revealed gallbladder stones with normal gallbladder size and wall thickness in 86, and increased gallbladder size and wall thickness in 48. Among these latter 48 patients, 10 had gallbladder hydrops, 5 calculus cholecystitis, and 33 findings related to calculus acute cholecystitis. The mean size of the gallbladder stones on ultrasonography was 11+/−7 mm. All these patients underwent surgery, with 101 patients undergoing laparoscopic cholecystectomy and 31 open cholecystectomy. The postoperative stay duration was 3+/−4 for all patients. Following the cholecystectomy, pathology evaluation of the specimen revealed chronic cholecystitis in 61, active chronic cholecystitis in 24, xanthogranulomatous cholecystitis in 10, epithelial hyperplasia in 15, polyposis in 8, adenocarcinoma in 3, and adenomyomatosis in 11. Postoperatively, 4 patients developed bile leak, 2 severe bleeding and 3 abdominal evisceration.

Discussion

There are many causes of gallbladder disorders. Cholecystitis can be classified as acute and chronic. The most common gallbladder disease is chronic cholecystitis together with cholelithiasis. Predisposing factors for gallbladder disorders are female gender, obesity, oral
contraceptive usage, diabetes, age over 40 years and liver disease. Symptoms of gallbladder disorders may include right upper quadrant pain, fever, vomiting, nausea, and pain radiating to the right shoulder and right scapular region [3, 4]. We investigated the relationship between gallbladder disorder and right shoulder pain in our patients. A gallbladder-related pathology was found in 32.5% of our patients with right shoulder pain. The female/male ratio for gallbladder disease is 2/1 and the incidence also increases with age [4]. We also found gallbladder disorders to be more common in females. The incidence of gallbladder disease also increased with age among our cases. Shoulder pain is a common musculoskeletal symptom in the population. It is the third most common cause of pain in the population following back and neck pain. Causes of shoulder pain include periarticular and glenohumeral disorders, cervical radiculopathy, plexus and entrapment neuropathies, neoplasms, cholecystitis and cholelithiasis, splenic trauma, subphrenic abscess, myocardial infarction, thyroid disorder, lung and pleura pathologies, and diabetes mellitus. The most useful diagnostic method is magnetic resonance imaging [5, 6]. It has been reported that pain radiating to the right shoulder can be seen together with right upper quadrant pain in these patients [1, 3, 4]. Most of our patients had pain radiating to the right shoulder together with right upper quadrant pain while some had accompanying dyspeptic symptoms. Leukocytosis may be present in gallbladder disease patients with acute cholecystitis while leukocytes may be normal in those with cholelithiasis [7]. AST and ALT values may also be normal in patients without fatty liver or choledocho lithiasis [7]. ALT and GGT values have been found to be high in acute cholecystitis patients but normal values have also been reported in cholelithiasis patients [8, 9]. The values of these two tests were high in our patients with acute cholecystitis and normal in those with gallbladder stones. Patients with right shoulder pain can be investigated with direct x-ray, ultrasonography and MR of the shoulder and abdominal ultrasonography can also be used [10, 11]. Ultrasoundography is a sensitive method for diagnosing gallbladder disorders [4, 10, 11]. We also used x-rays, superficial tissue ultrasonography and MR imaging for the differential diagnosis in patients presenting with right shoulder pain. The patients were referred to the General Surgery Outpatients if these tests were normal. Abdominal ultrasonography revealed pathology related to gallbladder disease in 132 of the referred patients but no pathology in 273 patients. Patients diagnosed with gallbladder disease underwent surgery and received treatment.

Conclusion

In conclusion, shoulder pain can have many causes. The relevant investigations should be performed to detect the cause depending on pain localization. Pain radiating to the right shoulder and the scapular region can develop in pathological conditions related to gallbladder disease. The treatment needs to arrange after careful evaluation of the patient. It is possible to increase the patient's quality of life with this approach.

References