

Case Report

Quinolone induced supraspinatus tendinopathy

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Abstract: Quinolones are family of broad spectrum antibiotics effective for both gram positive and gram negative bacteria. They have important roles in the treatment of many refractory infections like, hospital acquired infections, multi drug resistant tuberculosis etc. In 2008, a boxed warning was ordered by FDA on quinolones which have been associated with the causation of tendon rupture and tendinitis. Achilles tendon is the most common tendon affected. Tendinopathy involving supraspinatus and other rotator cuff muscles are very rare. Our case is a 54 year old female presented with insidious onset of pain and restricted movements of right shoulder of two weeks duration. She is a known case of multi drug resistant pulmonary tuberculosis. She is on continuation phase therapy for the same with moxifloxacin, linezolid, clarithromycin and ethambutol. Her last BAL sample culture was negative for tuberculosis three months back. There were no features of infection. MRI of right shoulder revealed supraspinatus tendinosis and myositis of rotator cuff muscles. As no other etiology could be postulated for the shoulder pain, this is most probably due to drug induced tendinopathy and associated myositis due to moxifloxacin. Moxifloxacin was stopped and she was treated with rest, physical therapy and supportive measures. Patient started improving clinically and radiologically. Tendinopathy is a known side effect of quinolones, but drug induced tendinopathy affecting supraspinatus and other rotator cuff muscles is a rare entity. Physicians should be aware about this known complication to reduce the associated morbidity and rupture, by early diagnosis and treatment.

Keywords: Quinolones, Drug induced tendinopathy, Supraspinatus tendinopathy, Moxifloxacin.

INTRODUCTION

Tendinopathy associated with Quinolone antibiotics is a topic of controversy, with many researchers believes in a direct causal relationship, while others are considering the risk as very negligible. In the year 2008, with the advent of a “black-box warning” mandated by the United States Food and Drug Administration (FDA), there is enough data to suggest that Quinolones should be used cautiously and judiciously in a selected population of patients [1]. This paper is a case report diagnosed and treated as quinolone induced supraspinatus tendinopathy. It also reviewed various literatures to unveil the pathophysiology, epidemiology, treatment options, and outcomes related to Quinolone induced tendinopathy and tendon rupture.

CASE REPORT

A 54 year old female presented with severe right shoulder joint pain and restricted movements of two week duration. Pain was of insidious onset and moderate dull aching type which progressed

over a period of two weeks to become severe excruciating pain with severe restriction of movements. There was no history of trauma. Pain is mainly on shoulder movements. There were no rest pains or night pains. No neck pain. The pain is not radiating and not associated with numbness or altered sensations. She took oral analgesics for pain relief and there was no relief.

She was a known case of multi drug resistant tuberculosis, for which she was on anti-tubercular drugs for nearly 18 months. At the time of presentation she was in continuation phase treatment with moxifloxacin, linezolid, clarithromycin and ethambutol for past three months. Her last Acid Fast Bacilli culture report from Bronchi Alveolar Lavage sample was negative three months back. No history of diabetes mellitus, hypertension, bronchial asthma, immunosuppression and thyroid disorders.

She was a moderately built and nourished lady. Her vitals were stable and she was afebrile. Her

right shoulder was examined. Deltoid contour was well maintained. Skin over the shoulder was normal. No warmth felt. Moderate to severe tenderness was present over the anterolateral corner of acromion. Range of movements of right shoulder, both active and passive, were severely restricted and painful. Abduction was only upto 20 degree. Rotation movements were almost absent due to pain. Power of rotator cuff muscles and signs of impingement could not be assessed due to severe pain. Left shoulder and cervical spine were normal.

On investigating further, routine biochemistry of blood including renal and liver functions were normal. Her white blood cell count was $8200/\text{mm}^3$. Rest of the cell line count were normal. X-ray of right shoulder did not revealed any abnormalities. MRI of right shoulder revealed intrasubstance increased signal within distal supraspinatus tendon with intact bursal and articular surfaces – supraspinatus tendinosis (figure – 1). It also revealed muscle edema involving rotator cuff muscles and deltoid.



Fig 1: MRI showing supraspinatus tendinosis

As there was no history of trauma, the duration of the presentation was short and no other etiology could be postulated, this is most probably due to drug induced tendinopathy due to the quinolone group of antibiotics used in her continuation phase of anti-tuberculosis treatment, moxifloxacin. As she was in the eighteenth month of her chemotherapy regime and AFB culture from the Bronchoalveolar Lavage fluid was negative, Moxifloxacin was stopped immediately. She was given physical therapy with pain modalities for a week. Oral anti-inflammatory drug, naproxen was given for a week. Pain managed with paracetamol infusion. After a week she was started on high quality physical therapy with rotator cuff rehabilitation exercises and range of movement exercises.

She was reviewed after four weeks of physical therapy. Her pain decreased significantly. Only mild pain on shoulder movements. Range of movements – abduction upto 100° , flexion upto 100° , internal rotation upto L4 level and external rotation upto 45° . She was advised to continue physical therapy. She was again reviewed at the end of eight weeks. She was totally asymptomatic. There was no local tenderness. Powers of rotator cuff muscles were full. Range of movement – abduction upto 120° , flexion upto 120° , internal rotation she was able to reach dorsal spine and external rotation upto 70° (figure 2 and figure 3). Repeat MRI taken, shows features of improvement radiologically (figure 4).



Fig 2: Clinical photograph after treatment showing 120⁰ active abduction



Fig 3: clinical photograph after treatment showing 70⁰ external rotation



Fig 4: Radiological signs of improvement in the MRI after treatment

DISCUSSION

Our case is a 54 year old female presented with insidious onset of pain and restricted movements of right shoulder of two weeks duration. She is a known case of multi drug resistant pulmonary tuberculosis. She is on continuation phase therapy for the same with moxifloxacin, linezolid, clarithromycin and ethambutol. Her last BAL sample culture was negative for tuberculosis three months back. There were no features of infection. MRI of right shoulder revealed supraspinatus tendinosis and myositis of rotator cuff muscles. As no other etiology could be postulated for the shoulder pain, this is most probably due to drug induced tendinopathy and associated myositis due to moxifloxacin. Moxifloxacin was stopped and she was treated with rest, physical therapy and supportive measures. Patient started improving clinically and radiologically.

Quinolones should be used cautiously in patients with risk factors associated with tendinitis, such as advanced age, diabetes mellitus, and history of tendon rupture, corticosteroid use, and renal dysfunction [2]. The Achilles tendon is most commonly affected in Quinolone-induced tendinopathy, occurring in 89.8 percent of cases. Other tendons, such as biceps brachia, triceps, extensor pollicis longus, flexor tendon sheath, patellar tendon, quadriceps, supraspinatus and subscapular is can also be affected [3]. Quinolone induced supraspinatus tendinopathy is a rare entity, with only a few reported cases in the literature. Tendinitis can confused with other diagnoses such as gouty flare, infection or venous thrombosis.² Tendinopathy is generally caused by repetitive injury. Unusual causes such as drug-induced tendinosis and tear must also be considered during evaluation of patients [3]. Ciprofloxacin is the most common quinolone associated with drug induced tendinopathy [4]. Age more than 60 years, corticosteroid therapy, renal failure; diabetes mellitus and history of tendon rupture are the risk factors associated with increased risk of tendon rupture [5]. Ultrasound and MRI give valuable informations in assessing the presence, extent and severity of tendon involvement if symptoms and signs of tendinopathy develop [3]. It may be difficult to prove a cause-and-effect relationship between a medication and a side effect. Tendon rupture can occur if not recognized early; reported cases frequently had coexisting risk factors. Clinical reports, pathological findings and experimental models collectively support a strong correlation between quinolones use and tendinopathy [6].

CONCLUSION

Tendinopathy is a known side effect of Quinolones. Tendinopathy affecting supraspinatus and other rotator cuff muscles is a rare entity. Physician must analyze thoroughly, the cause and type of

infection, the presence or absence of patient-specific risk factors and the clinically relevant alternatives that are available. Physician awareness should be emphasized to reduce the associated morbidity and rupture, by early diagnosis and treatment.

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