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Case Report

Novel use of famotidine in treatment of frozen shoulder: a case report

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ABSTRACT

Famotidine is a H_2 receptor blocker used to reduce gastric acid secretion. This case report highlights a novel use of famotidine. It may be used in the treatment of frozen shoulder. Frozen shoulder is a pathological condition characterised by restricted shoulder movement. We present a case report of a diabetic and hypertensive patient suffering from frozen shoulder along with hyperacidity and gastroesophageal reflux disease (GERD). Famotidine was prescribed for treatment of GERD. Famotidine not only provides relief from acidity but also results in decrease in pain score, disability score and shoulder pain and disability index (SPADI) due to frozen shoulder with improved movement. This therapeutic importance encourages us to report the significance of Famotidine in frozen shoulder. This also opens a new dimension in the role of acidity in the study of pathophysiology of frozen shoulder.

Keywords: Famotidine, Frozen shoulder, Acidosis, GPR4, Inflammation, Shoulder pain and disability index

INTRODUCTION

Frozen shoulder or adhesive capsulitis is a disease characterised by slow onset pain and muscle weakness in shoulder with restricted movement. However, there are no radiological abnormalities. It is of two types i.e. primary and secondary. Primary frozen shoulder is idiopathic and associated with diabetes. Secondary frozen shoulder is associated with trauma, rotator cuff tears, cardiovascular disease etc. People aged from 40 to 60 are mainly affected. Frozen shoulder is found in 3-5% of general population. It is more prevalent in women and diabetes is the common disease associated with it. About 10-20% of diabetic patients develop this condition. Patients with type 1 diabetes are highly prone to adhesive capsulitis in shoulder.[1]

Pathology and treatment of frozen shoulder is still unclear and management is based on reducing pain and reviving shoulder movement. There is a pathogenesis similarity between frozen shoulder and osteoarthritis. According to research acidity induces arthritis, joint pain and gout. So, acidity may have a role in the pathology of frozen shoulder. Famotidine is a competitive H_2 receptor blocker that reduces acid secretion and used in the treatment of hyperacidity, peptic ulcer and GERD.[2,3] We report a case of novel use of famotidine in the treatment of frozen shoulder.

CASE REPORT

A 55-year-old female adult weighing 54 kg suffering from frozen shoulder for 12 months was having symptoms of severe joint pain and problem in shoulder movement. She was prescribed few non-steroidal anti-inflammatory drugs (NSAIDS) for pain relief as and when required with physiotherapy to improve movement. The patient was a known case of diabetes and hypertension for 15 years and was on medication with glimepiride 2 mg, metformin 500 mg and amlodipine 5 mg once daily. Her blood pressure and blood sugar were normal. She was not getting any relief from frozen shoulder. She was also suffering from hyperacidity and GERD. To reduce acidity, she was using

home remedies. She was given 40 mg of famotidine once daily empty stomach in the morning. After treatment for 2 months, she not only got relief from acidity but also from frozen shoulder. Initially, the patient presented with a pain score of 35 (70%), a disability score of 34 (68%), and a total SPADI score of 34.5 (69%) which was decreased significantly to pain score of 3 (6%), disability score of 3 (6%), and total SPADI score of 3 (6%), reflecting a near-complete resolution of symptoms

DISCUSSION

Treatment of frozen shoulder includes medication, physiotherapy or surgery. Physiotherapy and exercise are the first choice of treatment which include range of motion exercises and some therapy including NSAIDs and steroid injection to recover the range and function of joint. Frozen shoulder is a self-limiting disorder. Frozen shoulder occurs in 3 stages. The first stage is the freezing or painful stage which may last for 1 to 9 months. The second stage is the frozen stage where the pain does not worsen but the shoulder remains stiff with restricted movement. It can last for 4-6 months. The third stage is thawing in which the patient recovers and may take 6 months to 2 years.[1] But this case of frozen shoulder is only one year old.

Acid-base imbalance is common in critically ill patients. Acidosis increases inflammatory reactions. Acid retention causes the activation of the white blood cells as a cleansing mechanism. Acid triggers production of inflammatory cytokines, such as interleukins like IL-1β, IL-6, and tumor necrosis factor-α (TNF-α). These inflammatory mediators attack healthy or unhealthy joints, tissues and/or organs and causes inflammation that leads to tissue and/or organ degeneration. So, acidity may have role in the pathogenesis of frozen shoulder. Again, some studies on the pathogenesis of GERD suggest that the oesophagitis associated with gastro-oesophageal reflux is cytokine mediated rather than induced by acid.[4,5] So famotidine may have anti-inflammatory effect.

The SPADI were used to assess the patient's shoulder function and pain severity before and after treatment. The pain score, disability score and SPADI score before treatment indicates severe pain and functional impairment. These scores suggested significant difficulty in performing daily activities, such as reaching overhead, carrying objects, and dressing, along with persistent pain affecting sleep and movement. Post-treatment SPADI scores decreased significantly reflecting a near-complete resolution of symptoms. A reduction in SPADI score of ≥10-13% is considered clinically significant, and in this case, the patient achieved an improvement of 63%, which indicates excellent recovery. The marked reduction in pain and disability highlights the effectiveness of the treatment and suggests restoration of near-normal shoulder function.[6-8]

Famotidine is an anti-secretory medication which inhibits acid secretion by competitively antagonising H_2 receptor in the parietal cells of GIT. It is a safe drug and has the advantage of once daily administration.[3] H_2 receptor is a G-protein coupled receptor (GPCR).[9] Acidosis (extracellular acidic pH) induces a proton sensing GPCR (GPR4) in endothelial cells and other cells. GPR4 activation stimulates expression of inflammatory genes like nuclear factor kappa B (NF-kB), prostaglandin endoperoxide synthase-2, adhesion molecules, chemokines and cytokines including interleukins and tumor necrosis factor-α. Small molecule inhibitors of GPR4 might suppress the inflammatory response.[10-12] In the present case famotidine not only provides relief from acidity but also provided complete relief from frozen shoulder. So, famotidine may have a novel use in frozen shoulder by inhibiting acidosis induced GPR4.

Further research is needed to study the role of acidity in the pathophysiology of frozen shoulder and other related disorders. There is also a need to study the mechanism of action of anti-inflammatory effect of Famotidine.

CONCLUSION

Famotidine decreases pain due to frozen shoulder and improves movement. This therapeutic significance of Famotidine in frozen shoulder opens a new dimension to study the role of acidity in the pathophysiology of frozen shoulder.

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