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Efficacy of Papain in Reducing Soft Tissue Swelling: A case report

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ABSTRACT

Papain or serratiopeptidase, a cysteine protease enzyme present in papaya, has been used for centuries as an anti-inflammatory drug. Now in modern medicine, it is being propagated as an anti-swelling medication. However, reports are mixed on the efficacy of papain in reducing swelling.
This case report look at the success of papain in reducing the size of olecranon bursitis in a 50-year-old patient The amazing reduction of the size of the bursitis in just two weeks without any surgical interventions might just swing the pundits to the positive direction of its benefit As evidence on the usage of this drug has been equivocal., this case report can hopefully shed some wonderful benefit of this drug.

Keywords: Papain, Serratiopeptidase, Swelling, Efficacy, Anti-inflammatory

INTRODUCTION

The most common drugs used for treatment of both acute and chronic inflammation include both steroidal and non-steroidal anti-inflammatory drugs (NSAIDs). However, drugs from both these group are saddled with many side effects [1]. Corticosteroids for example can cause peptic ulcer disease, raised blood pressure and glucose levels. NSAIDs meanwhile can cause severe complications such as peptic ulcer disease, renal impairment and elevate the risk of developing heart failure [1].

Thereby, the emergence of several alternative anti-inflammatory drugs such as enzyme-based serine proteases had been touted as an exciting and safer option in patients needing acute or chronic reduction of inflammation.

Worldwide, serratiopeptidase or papain has been used extensively in both the surgical and medical fields as an anti-inflammatory agent [2]. Example of use include in general surgery for traumatic and postoperative inflammation, in dentistry to reduce inflammation and increase antibiotic concentration in cases of periodontitis and also in otolaryngology for cases of upper and lower respiratory tract infections and as an expectorant [2]. Papain has traditionally been used as an anti-inflammatory drug. In modern medicine, its use is mainly as anti-swelling medicine. However, it is unclear whether this drug truly works or simply exerts a placebo effect . The use of papain can be extended to wound care as well. A case study reaffirms the efficacy of papain in eliminating over-granulated tissue in a chronic diabetic wound ulcer [3]. Therefore, this reaffirms the use of papain in healing of wound and reduction of swelling.

This case report will look at how this drug managed to drastically reduce the inflammation of an olecranon bursitis in a middle-aged man.

CASE REPORT

A 50-year-old man complained of pain and swelling over his left elbow for the past three weeks, and the swelling has steadily increased in size. There was no history of trauma. The patient reported that he usually sleeps on his left side and this could have led to this undesired situation now.
On examination, there was swelling over the posterior aspect of

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the elbow measuring 6 x 6 cm, non-tender, fluctuant and slightly warm (Figure 1, Left). There was no discharge. Some numbness was noted over the swelling, indicating compression of the nearby cutaneous nerves. A diagnosis of olecranon bursitis was made clinically based on the presenting symptoms and also the physical examination. Based on this physical examination also, the bursitis appeared to be non-infected as there was no fever, presence of discharge or punctum.

Patient was prescribed 1 papain tablet four times a day for two weeks. On review 2 weeks later, there was marked improvement in the overall clinical picture. There was no more pain and numbness and the swelling reduced to about 3 x 3 cm in size now (Figure 1, Right). Patient prescription of papain was refilled for another 2 weeks along with another follow-up appointment. At the subsequent appointment, there was total resolution of the swelling. This demonstrated the effectiveness of papain in this case as both as an anti-inflammatory and analgesic agent.

Figure 1: The swollen and tender left elbow at the initial presentation (Left) and the markedly reduced swelling of the left elbow at the 1st follow-up (Right)

DISCUSSION

Olecranon bursitis is the most common bursitis that is characterized by unusual fluid collection in the olecranon bursal cavity [4]. The relatively limited vascularity and superficial position of the bursa makes it very susceptible to inflammation and injury. It is also a common source for bacterial infection due to its limited vascularity Both elbows should be routinely examined after a detailed general examination of the patient presenting only with an unilateral elbow swelling, particularly looking out for signs of an infective bursitis.

Treatment of bursitis in general will depends on either it is infective or non-infective. Non-infective type usually requires the common tenets of rest, splintage, rest and use of anti-inflammatories along with as required aspiration and injection with local anaesthetics and corticosteroids [4]. In infective bursitis, aspiration is recommended before starting off antibiotics. Severe non-resolving cases may require surgical intervention in the form of bursectomy [4].

Papain has shown its effectiveness, both for its anti-inflammatory action and anti-swelling properties, which has also been shown in this case [5,6]. However, papain still lacks the pain reducing ability possessed by non-steroidal and steroidal anti-inflammatory drugs, thereby reducing its popularity [5,6].
The mechanism of action exerted by this proteolytic enzyme remains unclear. It is postulated that this proteolytic enzyme acts as a depolymerase to reduce the chain length of the protein molecules [6]. The postulated mechanism of action of serratiopeptidase is as following [7-9]:

i. as an anti-inflammatory: serratiopeptidase reduces inflammation by increasing draining of fluid as well as thinning the fluid and decreasing the amount of fluid in the tissues along with accelerating healing by rapid removal of surrounding dead tissues..
ii. As an analgesic: this action is exerted is through inhibition of pain inducing amines such as bradykinin that is usually secreted by the injured cells and tissues. Evidence also favour the side effect profile of this drug. There are minimal adverse drug reactions reported with this drugs that includes mostly minor skin allergies, gastrointestinal disturbances and occasional cough with no significant effects on the liver or kidney [2,10].

Dosing is variable. General dosing is sucking or chewing 2 tablets four times a day for the first day then 1 tablet four times a day for 5 days. It is contraindicated in those taking anti-coagulants or having generalised or systemic infections. Adherence is the key factor that leads to successful treatment [11].

CONCLUSIONS

In conclusion, the use of papain appears to be associated with reduction of soft-tissue swelling in this case report when used as an anti-swelling medication, treating even difficult bursitis.

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