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Research Article

A Comparative Analysis of the Efficacy Between Physical Therapy and Corticosteroid Injection in the Management of Anserine Bursitis

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Abstract: ***Introduction:*** Pes anserine bursitis (PAB) is a common cause of knee pain, often overlooked in favor of knee osteoarthritis diagnoses. ***Aim of the study:*** The aim of this study was to compare the efficacy of physical therapy and corticosteroid injection in patients with anserine bursitis. ***Methods:*** This prospective randomize study was conducted in the Department of Physical Medicine & Rehabilitation at Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh, from July 2014 to June 2015. The patients were divided into two groups (A and B). Patients of Group A (25 patients) were treated with physical therapy. Patients of group B (25 patients) were treated with corticosteroid injection. Data, collected through a questionnaire, interviews, and medical records, were analyzed using SPSS version 26. ***Result:*** The mean age of patients was 42.25 ± 3.24 years, with Group A comprising 88% males and 12% females, while Group B had 80% males and 20% females. Mean BMI was 24.4 ± 6.3 in Group A and 25.9 ± 5.0 in Group B. Post-treatment, Group B showed significant immediate improvements in pain relief (WOMAC stiffness subscale, $p = 0.0398$), tenderness index ($p = 0.0071$), and pain scores (VAS, $p = 0.0001$). Although both groups improved in function and total WOMAC scores, these changes were not statistically significant. ***Conclusion:*** This study highlights that both physical therapy and corticosteroid injections are effective treatment options for patients with pes anserine bursitis. Corticosteroid injections offer rapid relief of symptoms, making them beneficial for acute cases, while physical therapy provides better long-term treatment for improvement.

Keywords: Pes anserine bursitis, Corticosteroid injection, Physical therapy.

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INTRODUCTION

Pes Anserine Bursitis (PAB) is the inflammation of the bursa located at the insertion of the sartorius, gracilis, and semitendinosus muscles on the medial aspect of the knee.[1] These three muscles function as the primary flexors of the knee joint and play a crucial role in internal rotation and resisting valgus stress. When the bursa becomes inflamed, often due to overuse, trauma, or biomechanical stress, it can cause pain, swelling, and discomfort, especially during knee flexion or physical activity.[2]

Pes anserine bursitis, which affects the bursa beneath the pes anserine tendons, was first described approximately 70 years ago.[3] This condition is now recognized as one of the most common soft tissue pain syndromes involving the knee.[4] Chronic bursitis is often seen in individuals with underlying conditions such as rheumatoid arthritis or degenerative joint disease, reflecting the impact of long-term inflammation and joint degradation.

In one study, the incidence of pes anserine bursitis was found to be 2.5% among patients presenting with symptomatic knees.[3] Several risk factors are associated with this condition, including female gender, obesity, and type 2 diabetes, all of which may contribute to increased stress or altered biomechanics at the knee joint.[5,6] Despite its

prevalence, the exact etiology and pathogenesis of pes anserine bursitis remain unclear. However, mechanical overuse, trauma, or inflammation in the context of other knee pathologies may play a role.[7]

Pes anserine tendino-bursitis (PATB) is a common source of pain in individuals with knee osteoarthritis (KOA). This condition often presents with classic symptoms such as tenderness and swelling over the medial proximal tibia, or medial knee pain, which can sometimes mimic injuries to the medial meniscus or medial collateral ligament.[8] PATB can result from repetitive trauma, excessive valgus or rotational stress on the knee, or direct contusions, leading to inflammation in the bursa and tendons due to friction.[9] The diagnosis of PATB is typically based on the patient's clinical presentation. Pain is often exacerbated by activities such as walking up and down stairs, rising from a seated position, or at night. Chronic, refractory pain tends to worsen with activity, and patients commonly report discomfort while walking on flat surfaces.[10]

The most significant physical examination finding in patients with PATB is tenderness upon palpation of the proximal medial tibia, located approximately 2–3 cm below the anteromedial joint line. Additionally, external rotation of the tibia and active rotation against resistance typically exacerbate the pain, which further aids in diagnosis.[3]

Treatment options for PATB include rest, the use of non-steroidal anti-inflammatory drugs (NSAIDs), and physical therapy (PT) modalities to manage inflammation and pain. In more severe cases, intrabursal injections of local anesthetic and corticosteroids can be employed to provide rapid relief from inflammation. These injections may offer an effective alternative to PT, especially for patients seeking quicker symptom resolution.[10] The aim of this study was to compare the efficacy of physical therapy and corticosteroid injection in the management of anserine bursitis.

Objectives

The objective of this study was to compare the efficacy of physical therapy and corticosteroid injection in patients with anserine bursitis.

METHODOLOGY & MATERIALS

This prospective randomize study was conducted in the Department of Physical Medicine & Rehabilitation at Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh, from July 2014 to June 2015.

Inclusion criteria:

- Patients of both sexes of aged between 20-60 years
- Patients having PAB for 3 months or less
- Patients who are able to complete the questionnaire

Exclusion criteria

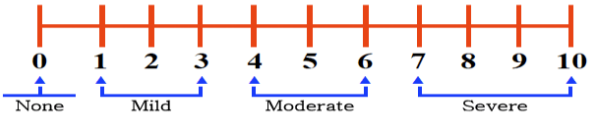
- Concurrent infection with other knee diseases
- Patients with neurological and motor diseases (stroke, Parkinson, myopathies, neuropathies, etc)
- History of surgery or recent knee trauma
- Patients who were not interested to participate in the study

This research included 50 patients diagnosed with acute pes anserine bursitis (PAB) who were divided into two groups for comparative treatment analysis. Group A (n=25) received physical therapy (PT), while Group B (n=25) underwent corticosteroid injections. All patient were selected from referred by various outpatient departments and general practitioners. Upon their arrival, a detailed medical history was taken, clinical examinations were conducted, and necessary investigations were performed. Group A was received physical therapy over 6 weeks. Group B, on the other hand, received corticosteroid treatment with a single injection of 40 mg triamcinolone acetonide administered to the tenderest point of the pes anserine region using an infiltration technique.

Measures of Variables:

- Demographic variables: Age, Gender, BMI and Duration of symptoms, pain side
- Outcome Measures:

1. Visual Analogue Scale (VAS):



2. Tenderness Index: No pain=O, Describes pain=1, Patient winces=2, Patient winces and withdraw the affected part=3, The patient will not allow the joint to be touched=4.

3. Western Ontario McMasters Universities osteoarthritis index (WOMAC): 0-20= Pain, 0-8 for Stiffness, and 0-68 for Physical Function.

The data collection involved face-to-face interviews using a standardized semi-structured questionnaire. Additionally, a checklist was used to record data from medical reports, history sheets, and investigation results. All necessary information was cross-checked immediately after interviews and reviewed for accuracy. Patients who met the inclusion criteria and provided informed consent were included in the study.

Statistical Analysis:

All data were recorded systematically in preformed data collection form and quantitative data was expressed as mean and standard deviation and

qualitative data was expressed as frequency distribution and percentage. Statistical analysis was carried out by using Statistical analysis was done by using SPSS (Statistical Package for Social Science) Version 23 for windows 10. P value <0.05was considered as statistically significant. Ethical approval regarding the study was obtained from the institutional ethical review committee.

RESULT

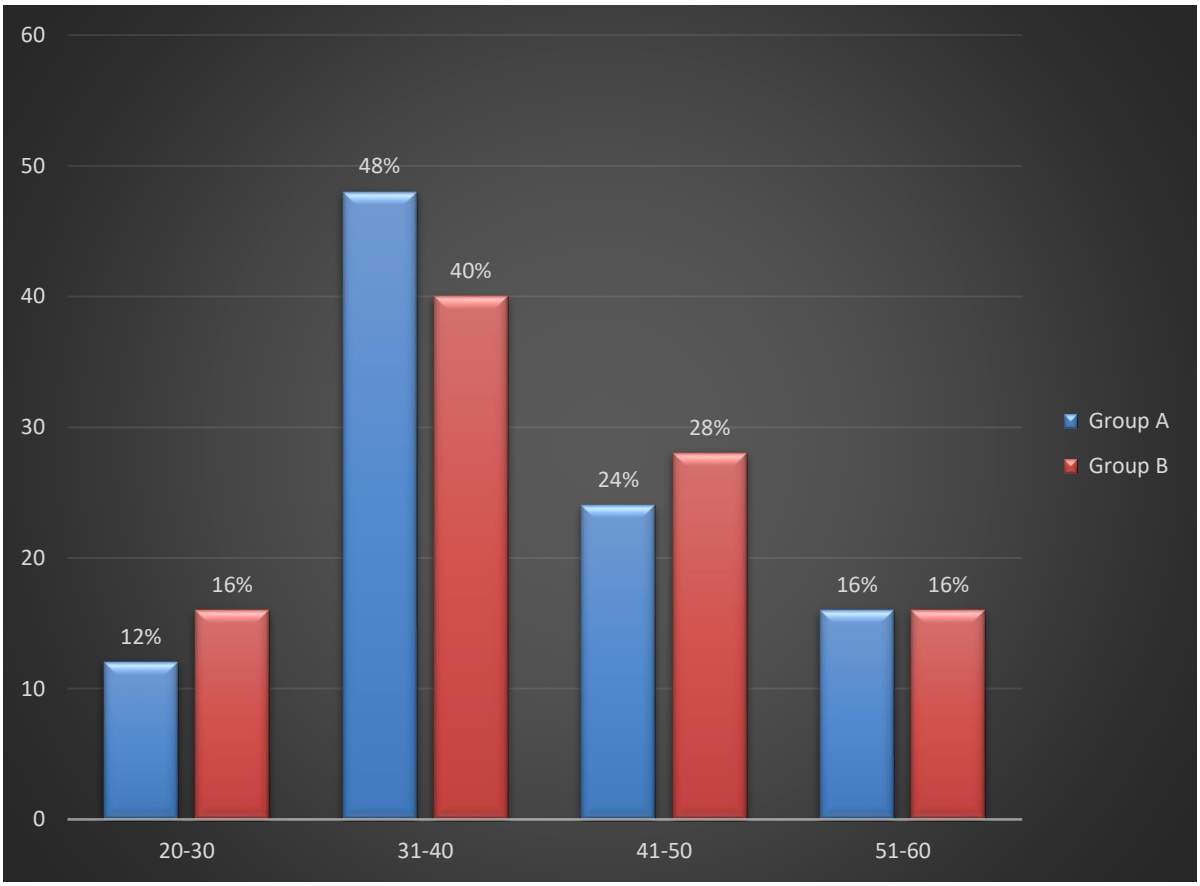


Figure 1: Age distribution of the patients

Figure 1 shows that the age distribution of the patients. In Group A, 12% of participants were aged 20-30 years, 48% were in the 31-40 age range, 24% were between 41-50 years, and 16% were 51-60 years old. Similarly, Group B had 16% of participants aged 20-30 years, 40% between 31-40 years, 28% in the 41-50 range, and 16% in the 51-60 age group.

Table 1: Baseline characteristics of the patients

Characteristics		Group A (%)	Group B (%)
Age			
Mean±SD		42.25±3.24	
Gender	Male	22 (88)	20 (80)
	Female	3 (12)	5 (20)
BMI			
Mean±SD		24.4±6.3	25.9±5.0
Side (right/left)		9/5 (36/20)	8/6 (32/24)

Table 1 shows the baseline characteristics of the patients. The mean age was 42.25±3.24 years. Group A had 88% males and 12% females, while Group B had 80% males and 20% females. The mean BMI was 24.4±6.3 in Group A and 25.9±5.0 in Group B. Right/left side distribution was 36%/20% in Group A and 32%/24% in Group B.

Table 2: Comparison of pretreatment and post-treatment between the groups

Parameter	Group A (n=25)	Group B (n=25)	p-value
WOMAC pain subscale			
Pretreatment score D_1	12.92± 5.26	15.18 ±4.87	0.1215
Post treatment score W_6	3.51±3.78	2.78±2.08	0.4018
WOMAC stiffness subscale			
Pretreatment score D_1	1.66±0.71	1.95±0.78	0.1756
Post treatment score W_6	0.62±0.88	0.19±0.51	0.0398
WOMAC function subscale			
Pretreatment score D_1	21.00±7.26	24.13±7.94	0.1523
Post treatment score W_6	4.48±5.83	3.14±4.05	0.3500
WOMAC total			
Pretreatment score D_1	31.23±11.75	37.68±10.20	0.0436
Post treatment score W_6	7.09±8.45	5.32±7.04	0.4250
Pain score (VAS)			
Pretreatment score D_1	7.67± 0.83	7.54 ± 0.37	0.4779
Post treatment score W_6	6.31± 0.85	5.02± 0.26	0.0001
Tenderness index			
Pretreatment score D_1	2.66± 0.72	2.90± 0.32	0.1343
Post treatment score W_6	1.98± 0.58	1.30± 1.06	0.0071

Table 2 shows the comparing two treatment groups corticosteroid injections (Group A) compared to physical therapy (Group B) for treating anserine bursitis over six weeks, examining multiple parameters, including the WOMAC (Western Ontario and McMaster Universities Arthritis Index) pain, stiffness, and function subscales, along with pain intensity measured by the Visual Analog Scale (VAS) and tenderness index. In the WOMAC pain subscale, both groups demonstrated substantial improvement from baseline to six weeks, with scores decreasing from 12.92±5.26 to 3.51±3.78 in Group A and from 15.18±4.87 to 2.78±2.08 in Group B. Although Group B achieved a slightly lower post-treatment pain score, the difference was not statistically significant (p=0.4018). However, the WOMAC stiffness subscale showed a improvement favoring Group B, with post-treatment scores decreasing to 0.19±0.51 in Group B compared to 0.62±0.88 in Group A, and this difference reached statistical significance (p=0.0398). These results suggest that physical therapy may provide a greater reduction in joint stiffness over corticosteroid injections. Regarding functional improvement on the WOMAC function subscale, both groups showed similar reductions in scores (from 21.00±7.26 to 4.48±5.83 in Group A and from 24.13±7.94 to 3.14±4.05 in Group B), and the difference was not statistically significant (p=0.3500). For the total WOMAC scores, Group B started with a higher baseline (37.68±10.20) and ended with a slightly lower post-treatment score (5.32±7.04) compared to Group A's 7.09±8.45, but this did not reach statistical significance either (p=0.4250). The most substantial differences between groups appeared in the VAS pain score and tenderness index, both indicating a better response to physical therapy. Group B had a significantly lower VAS pain score (5.02±0.26) compared to Group A (6.31±0.85) at six weeks, with a highly significant p-value of 0.0001. Additionally, the tenderness index improved more in Group B, with scores falling from 2.90±0.32 to 1.30±1.06 compared to Group A's decrease from 2.66±0.72 to 1.98±0.58 (p=0.0071). Corticosteroid injections provide immediate relief, and physical therapy results in reducing stiffness, pain intensity, and tenderness, making it a long-term treatment option for anserine bursitis.

DISCUSSION

Pes Anserine Bursitis (PAB) is a common cause of inferomedial knee pain and should be considered in differential diagnoses.[11] It can significantly impair patients' functional abilities and quality of life.[12,13] Often, PAB symptoms are misattributed to knee osteoarthritis.[14] In many cases, patients presenting with PAB are seen at the Out Patient Department (OPD) of the Physical Medicine and Rehabilitation (PM&R) unit at BSMMU. In the present study, the mean age of the group was 42.25±3.24 years, with middle-aged patients being more susceptible to acute PAB. Additionally, we observed a higher prevalence of PAB in female patients compared to males. In our study, the mean BMI was 24.4±6.3 in Group A and 25.9±5.0 in Group B. The distribution of right and left side involvement was 36% and 20% in Group A, respectively, while it was 32% and 24% in Group B. In this study, visual analog scales and tenderness index and WOMAC were decrease in group B patients received corticosteroid injections than group B patients received physical therapy. The patient improvement and compliance were more in group B treated with corticosteroid

injections. Külcü et al.[15] conducted a study to investigate the factors influencing pain and disability in patients with knee osteoarthritis. They examined variables including age, gender, body mass index (BMI), smoking habits, disease duration, educational level, and exercise status. Their findings highlighted that BMI emerged as the most significant factor associated with the severity of pain and functional limitations in these patients. In other study, smaller percentages of patients with knee osteoarthritis (OA) receive physical therapy (PT) compared to those receiving corticosteroid injections (CSI) before undergoing total joint replacement. This trend highlights a potential underutilization of PT in the management of knee OA, as many patients may opt for CSI as a quicker intervention.[16] In a prospective interventional study without a control group, Yoon et al. assessed the efficacy of local corticosteroid injections in managing symptoms of knee osteoarthritis. The evaluation was based on changes in Visual Analog Scale (VAS) scores for pain and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) scores for functionality, demonstrating the intervention's impact on pain relief and functional improvement.[17] In a study involving 17 patients clinically diagnosed with pes anserine bursitis, a corticosteroid injection was administered. Two weeks post-treatment, significant reductions were observed in their Visual Analog Scale (VAS) scores, WOMAC pain scores, and WOMAC functional indices, indicating improved pain relief and functionality.[17] In other study, a total of 26 patients with knee osteoarthritis (OA) and clinically diagnosed pes anserine tendinobursitis (PATB) syndrome evaluated the effectiveness of local corticosteroid injections. Outcomes were measured using the Pain Visual Analog Scale (VAS), the Western Ontario and McMaster Universities Arthritis Index (WOMAC), and Global Patient/Physician Assessment via the Likert scale. Significant improvements were observed in VAS, WOMAC pain, and WOMAC physical function indices following the injections. According to the Global Patient Assessment, 2 patients had the best response, 6 showed good improvement, 1 reported a fair outcome, 8 remained unchanged, and none worsened. Notably, the 2 patients with the best response had ultrasound-confirmed evidence of PATB.[17] Larson and Baum outlined several criteria for diagnosing PAB. Key symptoms include pain when climbing stairs, particularly in the anteromedial area of the knee, and morning stiffness lasting more than one hour. Patients may also experience nocturnal pain and difficulty rising from a seated position. Additionally, tenderness and swelling over the pes anserine bursa are indicative of this condition.[18]

The findings of this study, for patients with mild to moderate symptoms or those seeking to avoid invasive procedures, physical therapy should be prioritized as a first-line treatment. Conversely, corticosteroid injections may be appropriate for patients presenting with severe pain who require immediate relief. Additionally, integrating both modalities could enhance patient outcomes, with corticosteroids providing initial relief followed by a structured physical therapy program for long-term management.

Limitations of the study

Our study was a single centre study. The study may have a relatively small sample size, which can limit the findings and reduce the statistical power to detect significant differences between treatment groups. Other factors affecting the outcomes, such as the intensity and duration of physical therapy or variations in injection techniques, may not have been controlled for, potentially skewing results. The study may primarily focus on short-term outcomes, whereas chronic conditions like PAB might require longer-term assessment to understand the sustained efficacy of treatments.

Conclusion and recommendations

This study aimed to compare the efficacy of physical therapy versus corticosteroid injections in managing pes anserine bursitis (PAB). The findings indicate that both treatment modalities can be effective in alleviating pain and improving function in patients suffering from PAB. While corticosteroid injections showed superior outcomes in immediate pain relief of symptoms, making them a viable option for acute cases while physical therapy terms of long-term treatment and functional improvement as measured by the WOMAC scale. Both physical therapy and corticosteroid injections have their unique benefits, and a combination of these treatments may offer enhanced outcomes for patients with PAB.

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Conflicts of interest: There are no conflicts of interest.

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