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Exploring the Effects of Local Steaming in the Management of Primary Frozen Shoulder: A Case Report

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ABSTRACT:

Frozen shoulder is one of the commonly encountered debility, associated with the significant morbidity. Extreme pain and disability are main symptom for which the treatment is sought. Despite the recent advances in the treatment modalities, the NSAIDs continue to be the most common drugs used frequently to alleviate the symptoms of the frozen shoulder, owing to their cost effectiveness. These, however, have problematic side effects on the urinary, cardiovascular, and gastrointestinal systems when taken orally. To ensure the cost effectiveness and the safety, the recent modern research has focused on the evaluation of the topical therapies. *Inkibab* (local steaming) is one of the ancient and efficient parental methods of the local drug delivery in the *Unani* system of medicine. In this case, patient presented with the complaints of extreme pain and disability for which underwent the 7 sessions of local steaming with the medicinal decoction for 1 week span. The local steam was administered to affected area for 10 minutes, ensuring direct exposure to steam while maintaining a safe distance to avoid burns and exposure. Following the local treatment, there was a notable improvement in the patient's condition, as evidenced by reductions in both the SPADI (Shoulder Pain and Disability Index) score and the Visual Analog Scale (VAS) score. ROM, SPADI score measured before and after treatment, demonstrated significant improvement in both pain and disability, while the VAS score assessed on a daily basis presented a marked reduction in pain intensity.

KEYWORDS: Frozen Shoulder, *Inkibab*, SPADI, VAS.

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INTRODUCTION:

The frozen shoulder is one of the common musculoskeletal conditions that disrupt the daily normal life to a great extent. [1]. Synonymously called as adhesive capsulitis and periarthritis. the frozen shoulder is marked with the gradual and progressive inflammation of the glenohumeral joint capsule, thereby bringing about the contracture of the joint, leading to the stiffness and the loss of the mobility [2]. The term primary frozen shoulder is used for the idiopathic onset of the condition while as the secondary type develops post injury or other diseases. [3]The condition is more common in the age group of 40-60 years with women being at a greater risk than men. Although the definite incidence and prevelance is not known, some reviews report the 5.3% of the population is affected [4]. Diabetes, family history, and potentially hypothyroidism are some of the risk factors for this condition. [5]Recent histological studies have showed the presence of inflammatory cytokines such as Tumour Necrosis Factor and Interleukins in the affected joint [1].

The signs and symptoms of frozen shoulder are described under the heading *Waja ul Mafasil* in the classical *Unani* texts. It has been described as a painful inflammatory condition that occurs as an imbalance of the humours in the joints, surrounding muscles, and shoulder ligaments. It can affect any of the joints in the body[25].

The diagnosis of FSCS is made using (i) clinical examination, (ii) ruling out other pathologies, and (iii) a normal glenohumeral radiograph. There is no clear gold standard test for this condition [6].–X rays are not routinely required, but can be done to exclude shoulder arthritis or posterior dislocation, which could present with similar clinical signs[7].

There are the three characteristic stages of the natural history of frozen shoulder: Pain , stiffness and the recovery phase [8].Even though a frozen shoulder can resolve on its own, it may take a while or cannot recover at all. Following four years of treatment, about 40% of patients still complain of having the symptoms present [9]. The normal recovery time for frozen shoulder is 12 to 42 months, however it can happen as early as 6 months or as late as 10 years [10].

Some clinicians have stated that the disability can recover only in the initial period and that the biggest improvements happen in the early phases of the illness with the probability of restoring the normal function decreases with time [11]. This signifies the need of the intervention in the early stage.

The main reason people seek treatment is the extreme pain and disability brought on by the movement restriction [12]. A range of treatment options are available, but there is uncertainty about when these should be offered and their clinical effectiveness or cost-effectiveness[13]. The treatments may consist of oral corticosteroids, non-steroidal anti-inflammatory drugs (NSAIDs), articular distension, injections of corticosteroids, local anesthetics, sodium hyaluronate, and calcitonin, manipulation under anesthesia, arthroscopic and open surgery, or a combination of these [14].

Although the above mentioned invasive therapies have demonstrated encouraging outcomes in treating the condition , its broad use has been hindered by expensive nature . Because of this, non-steroidal anti-inflammatory medicines (NSAIDs) are frequently used by people with frozen shoulders to relieve their symptoms. NSAIDs can, however, have problematic side effects on the urinary, cardiovascular, and gastrointestinal systems when taken

orally[15]. To ensure the cost effectiveness and the safety, the recent research has focused on the evaluation of the topical therapies, particularly topical NSAIDs in managing the frozen shoulder by additionaly combining these therapies with the physical therapy[15].

Topical preparations may be a useful alternative to oral preparations for patients with FS. In the *Unani* system of medicine, *Inkibab* (local steaming) is one of the efficient methods of the local drug delivery . It has been extensively used over the years as a successful therapeutic modality for numerous disorders, particularly for the pain management.

Hence, this case report is presented to demonstrate the clinical features, causes, diagnosis, and management of the Primary Frozen shoulder with *Inkibab* (Local steaming) in a middle age female.

CASE REPORT:

A 32 year old housewife presented to the OPD of RRIUM, Srinagar, with the new onset, dull, localised pain in the right shoulder that would worsen on the motion, from the past 40 days. The pain would awaken her during the night whenever she rolled on the affected arm and it would slightly relieve by taking the hot bath. Moreover, the patient also reported to have the restriction of movement (ROM), manifested by the inability to unbutton her sweater or uplift or move her arm sideways for the house hold chores. She felt the heavy weight over the right shoulder every time she tried to mobilize it. The patient had tried the oral NSAID'S to alleviate the pain, but proved to be inefficient. There was no past history of the Diabetes Mellitus or trauma shoulder, the bone damage or the osteoarthritis.

On the physical examination, no atrophy of the muscles was seen on the affected side. The joint was tender on the palpation and the significant reduction was seen in both the active and passive range of the flexion, abduction and the external rotation of the right shoulder in comparison to the unaffected shoulder. The deep tendon reflexes of upper extremities were normal. The neck examination (spurling's test and jackson's test) couldn't produce the pain on the affected side. The history and the physical examination were diagnostic of the Frozen Shoulder. A plain shoulder radiograph of the right shoulder was normal, thereby confirming FS .

THERAPEUTIC INTERVENTION:

The intervention included the 7 sessions of the local steaming (*Inkibab*) over the span of 1 week. For this purpose, at each session 5 litres of water were put in the steaming equipment of the IPD and 50 grams of each of the mentioned drugs (Table 1) were soaked in it [19][25]. The medications and the water were heated up together upto the boiling temperature in the equipment. The boiling brings in the medicinal extracts (analgesic and the anti-inflammatory extracts) of the herbs into the solvent. Thereby, the hot steam of the same extracts ejects through the steam outlet. The shoulder joint, deltoid and the trapezius (Right sided) were exposed to this medicated steam for 10 minutes, once daily.

Follow ups:

The patient had the first visit to OPD of RRIUM, Srinagar on November 19, 2024. The patient had a daily hospital visit for the steaming therapies, meanwhile the outcome measures were assessed as well.

The primary outcome measures were for the pain and the subjective functional

assessment. The latter was assessed before and after the 7 sessions of the therapy by the Shoulder Pain and Disability Index (SPADI) questionnaire while as pain assessment was done using VAS scale on the daily basis.

After the seven sessions of the therapy, exactly after the gap of 15 days and 30 days, two telephonic conversations were held with the patient. She was asked to rate on the Likert scale that how well she was satisfied with the treatment and whether there was any relapse of the symptoms so far.

Clinical Outcomes:

The patient reported a 60% improvement in shoulder pain following the first two sessions only (Table 2). According to the SPADI questionnaire, the patient also reported improvement in her function of over 70% before and after the treatment [Table 3 and 4]. On the telephonic conversation held with the patient, she stated that she was quite satisfied with the intervention and there had been no relapse since then.

Table- 1: Ingredients Used in the Intervention.

Ingredients	Botanical name	Part used	Quantity
Marzanjosh	*Origanum vulgare*	Flower	50 gm
Babuna	*Matricaria chamomilla*	Flower	50 gm
Nakhuna	*Trigonella uncatum*	Seeds	50 gm
Gul-i-Tesu	*Butea monosperma*	Flower	50 gm

Table- 2: Assessment of pain

Day of therapy	VAS Score
Ist	8
2nd	6
3rd	5
4th	4
5th	3
6th	2
7th	1

Table- 3: SPADI score:

I. How severe is your pain ?	**Before treatment**	**After treatment**
At its worst	8	3
When lying on the involved side?	8	3
Reaching for something on a high shelf?	8	3
Touching the back of your neck?	8	3
Pushing with the involved arm?	8	3
II. Disability scale (How much difficulty do you have)?	**Before Treatment**	**After Treatment**

Washing your hair?	7	2
Washing your back?	7	2
Putting an undershirt ?	7	2
Putting on a sweater that buttons on front	7	2
Putting on trousers?	7	2
Placing an object on high shelf?	7	2
Carrying a heavy object ?	7	2
Removing something from backpocket?	7	2

BT=(8+7)/2= 7.5, AT=(3+2)/2=2.5

Abbreviations:

FS	Frozen shoulder
SPADI	Shoulder pain and disability index
VAS	Visual Analogue Scale
RRIUM	Regional Research Institute Of Unani Medicine
BT	Before treatment
AT	After Treatment

DISCUSSION:

Numerous people in the middle age experience this debilitating condition called Frozen Shoulder. These symptoms can be seen in the other joints also [16-18]. The pain mainly leads the patient to seek the treatment [1]. Although the certain effective therapies have emerged recently to treat the condition, the oral medication remains the most common therapy, owing to its easy use and the effective nature. NSAIDs are the most common medications used by the patients of FS for alleviating the pain and improving the joint function. NSAIDs help patients with both acute and chronic pain, but because of the negative consequences of the oral NSAID absorption in the gastrointestinal tract, the recent researchers are now evaluating the efficacy of the topical anti- inflammatory and analgesic interventions in order to eliminate the negative effects that come with oral analgesics [15].

The improvement in the symptoms might be the result of the pharmacological properties of the drugs and the local effects of the heat itself. The drugs used for the therapy include *Marzanjosh* (*Origanum vulgare*), *Babuna* (*Matricaria chamomilla*), *Nakhuna* (*Trigonella uncatum*), *Tesu* (*Butea monosperma*). The Unani text books have documented *Musakkin alam* or analgesic effects of *Nakhuna. Babuna* and *Gul Tesu* exhibit the *Muhalil*(resolvent properties), which make them potential analgesic drugs as well [19].

Furthermore, in one of the pre-clinical conventional studies, *Butea monosperma* showed the efficient anti-inflammatory and analgesic effects[20]. The antinociceptive or analgesic effect of Butea monosperma were made evident on the scientific parameters by the study carried out by Thiagarajan et al [21]. Nureen et al demonstrated the extracts butrin and butein of the flowers of *Butea monosperma* showed significant anti-inflammatory effects by the inhibition of TNF-α and IL-8[22]. Seoudi et al verified the analgesic effects of *Origanum majorana* are exhibited by the extract Linalool in it, through the cholinergic, opioid and dopaminergic system [23]. Animal models were also used to study *M. chamomilla's* anti-

inflammatory properties. Wu et al. claimed that the essential oil, flower water, aqueous extract, and volatile and non-volatile components of *M. chamomilla* can all effectively prevent xylene-induced mouse ear swelling, carrageenan-induced rat pedal swelling, and the enlargement of celiac capillary vessel permeability in mice[24].

CONCLUSION:

The local steaming improved the pain and disability in the patient to the great extent. The positive response observed warrants the documentation. Furthermore, studies with large sample size are required to validate this treatment.

Limitations of the study:

The study focused on a single patient, so the outcomes might not be generalized to other patients. Hence, future studies should include a large sample size.

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Consent of patient:

The consent of the patient has been taken for publication and procedure without disclosing the identity of the patient.

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