

A ROLE OF SIDDHA EXTERNAL THERAPEUTIC PROCEDURE OTTRADAM (FOMENTATION) FOR THE MANAGEMENT OF FROZEN SHOULDER-A CASE REPORT

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Abstract

A 52 year female from Salem district, Tamilnadu state presented with pain and restricted range of motion in external rotation, flexion and internal rotation of left shoulder joint in both inactive and passive moments for more than 10 months. she was diagnosed to be affected by the frozen shoulder which is equivalent kumbavadham which is one of the vadha disease mentioned in the siddha system of medicine, the textbook of yugi vaithiya sindhamani 800. she was treated with ottradam therapy (Fomentation) one of the external therapeutic procedure, with erukku ilai ottradam. After the treatment period of 15 days, the patient was followed for 6 months. There were no adverse drug reactions observed during the course of treatment. This ottradam therapy has provided the reduction pain, spasticity, restricted moments which was measured using goniometer and SPADI Index.

1.Introduction:

The symptoms of frozen shoulder, often known as Adhesive capsulitis(AC), include painful active and passive glenohumeral (GH) joint range of motion (ROM) that later becomes gradually reduced, with spontaneous full or nearly full recovery occurring over a variable length of time^[1]. Shoulder pain and stiffness can negatively impact everyday activities and as a result, lower quality of life. It is commonly acknowledged that Simon-Emmanuel Duplay was the first doctor to describe this condition, which he dubbed "scapulohumeral periartthritis" With general radiological preservation of the joint, "periartthritis" refers to a painful shoulder ailment that is separate from arthritis. The phrase "frozen shoulder," later created by Earnest Codman in 1934, emphasises the crippling loss of shoulder motion experienced by those suffering from this illness. This situation, according to him, is "tough to define, difficult to treat, and difficult to explain from a pathology point of view." Julius Neviasser characterised this illness as adhesive capsulitis in a groundbreaking histology research published in 1945, explaining the inflammatory and fibrotic alterations seen in the capsule or nearby bursa, Knee and elbow^[2]. However, the relationship between adhesive capsulitis and diabetes mellitus (DM) states that the incidence of AC is two to four folds higher in DM patients than in the general population^[3]. Frozen shoulder incidence estimates from shoulder clinics range from 2% to 5%. Most often impacted are women between the ages of 40 and 60. However, they discovered that 40% to 50% of patients with nonoperatively managed frozen shoulder did not regain their baseline function and continued to experience persistent discomfort in their long-term (average 7 and 4 years, respectively) follow-up investigations^[4].

There are two types: (1) primary, which develops slowly and is idiopathic; (2) secondary, which typically results from trauma or subsequent immobilisation.

Three stages of frozen shoulder, (a) FROZEEZING (b) FROZEN(c) THROWING

a. FREEZING: HURT FIELD

Patients may delay seeking treatment at this stage because they believe that the pain will eventually go away if they take care of themselves. However, as the symptoms worsen and both active

and passive range of motion (ROM) become more constrained, the patient may eventually decide to seek medical attention.

b. FROZEN: A STAGE OF TRANSITION

Most patients will move on to the second stage. The second stage can last between 4 and 12 months. The common capsular pattern. Shoulder discomfort does not always get worse during this stage. Arm movement may be restricted due to pain near the end of the range of motion. The most restricted motion is external shoulder rotation, which is followed closely by shoulder flexion and internal rotation. This is known as the typical capsular pattern of limitation. Pain at the end of the range of motion ultimately stops occurring during the frozen stage.

c. THE THAWING STAGE is defined by a gradual recovery of shoulder mobility and begins when range of motion begins to improve. It can last anywhere between 12 and 42 months^[5].

Existing conventional treatments are pharmacological (Non-steroidal anti-inflammatory drug (NSAID), intra articular injection), physiotherapy, Acute puncture, yoga poses etc. Even Though the pain was relieved by steroidal drugs, NSAIDs and the restricted movement wasn't recovered. In addition NSAID has been registered for some of the Adverse drug reactions like acute kidney injury and gastritis etc. FS made the patients dependent, anxiety, depression, inferiority and eventually it deprived the quality of life of individuals. Consciously it affects the patient's mental health owing to difficulties in doing daily needs^[6]. This diseased condition was analogous to kumbavadham, one of the types of vadhya disease mentioned in yugi vaithiya sindhamani 800. Kumbavadham is characterised by pain in the shoulder and upper limb, restricted ROM, burning sensation in cheek and eyes, lower Abdominal pain etc^[7]. In siddha treatment option Among 32 types of external therapies followed in siddha system of medicine, ottradam (fomentation) a non invasive harmless, without cautious aseptic manner, cost effective, time saving procedure. Herein we reported a single case report of a patient diagnosed as kumbavadham (Frozen shoulder) and successfully treated with siddha external therapy ottradam and its prognosis^[8].

2. Case presentation

A 52 years married unemployed woman from salem district, tamilnadu state presented with complaints of left shoulder pain which was insidious onset, Restricted ROM in external rotation, abduction, internal rotation in both passive and active movements for 6 month, difficulties in combing, difficulties in lying on left side, disturbed sleep pattern, since 6 months. She has taken a vegetarian diet, taking tubers, cereals Frequently. Her bowel bladder functions were normal. As per Modified kuppuswamy scale 2022 her's socio-economic status was upper lower^[9]. She was a known type 2 diabetes mellitus for 2 years. At the time of case taking her's fasting blood sugar level was 277mg/dl, 345 mg/dl in Post prandial & her HbA1c level-12.3% was recorded. She has a family history. She has been taking oral hypoglycemic agents tab. Metformin 500 mg 1 bd, tab. Glibenclamide 5 mg 1 bd for the past 2 years. She alleged no history of trauma, self fall, road traffic accident, and euthyroid. The radiological investigations like plain x-ray of left shoulder joint ap view and y- view was taken 5 months back which illustrated no dislocation, fracture, avulsion, sclerosis and degeneration rather shown reduced joint space. She went to near by health centre for conventional management. Owing to reappearing and persistent progression of disease, restricted ROM, she came to K.S siddha hospital and de-addiction speciality centre, salem.

2.1. Clinical findings

The patient had a complaints of pain, stiffness in left shoulder joint, difficulties in performing daily toileting activities, difficulty in comb, difficulty in lying on left side, difficulty to reach shelf to take things. Pain was worse at night and in the morning associated with stiffness. The clinical findings, ROM (assessed by goniometer), siddha clinical assessment Enn vagai thervu^[10]-1. Naa (Tongue examination), 2. Niram (colour of the body), 3. Mozhi (speech), 4. Vizhi (eye examination), 5. Malam (stool examination), 6. Moothiram (urine examination), 7. Naadi (pulse examination), 8. Sparisam (palpation). The vital signs were normal.

2.2. Diagnostic assessment

The pain and disability was assessed by SPADI scale, respectively 36/50 & 61/80 which was done prior to the intervention^[11]. Left shoulder ROM was assessed by goniometer and recorded in table²^[12]. This assessments were done in seven days once in regular follow-up. Shoulder joint examination showed no muscle wasting and no disused atrophy in left shoulder and upper limb. Protective Muscle spasm was seen. The naadi was found to be vadha pitham and the neikkuri was (Oil in urine sign) was "aravena neendathu" ie, snake pattern. With the above symptoms she was diagnosed, a case of Kumbavadham (Frozen shoulder)with prominent Vadha humour.

2.3. Informed consent

Written informed consent was obtained from the patient based on that the above data were reported in the journal. The patient understood that name and initial won't be disclosed and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

3. Therapeutic intervention:

3.1. Therapeutic purgation

To normalize the vitiated vatha humour, therapeutic purgation was started. Meganatha Kuligai 130 mg (1 tablet) was chosen for therapeutic purgation^[13]. The pill was powdered, mixed with Chukku decotion and was given to the patient at 5 am in a single dose. Hot water was administered every 15 min. The purgation started at 5.30 am. The patient had nausea and passed loose stools 5 times since morning. The purgation subsided in the evening. She was given a glass of butter milk. The diet she took on the day of purgation was a cup of rice and buttermilk in the afternoon and 3 idlies (rice cakes) for dinner. On the day of purgation therapy, no blood investigations or therapy was done. Patient was advised to take rest. From the second day, blood investigations and the assessment of pain, shoulder movements with the aid of goniometer and SPADI scoring was done.

3.2. Ottradam therapy

The treatment package of ottradam with erukku illai dipped in warm Margosa oil (Veppennai) was started. The ingrediants of erukku ilai ottradam was shown in table 1^[14]. Vepennai is known for its palliating effect of pain in vatha disease, Warm oil supposed to reduce muscle spindle sensitivity to stretch, reduce nerve sensitivity, boost blood flow, increase tissue metabolism, relax muscles, and increase flexibility^[15]. The therapy procedure was done daily morning at 7am in empty stomach. The details of the erukku ilai Ottradam are shown in Table 1. Duration of treatment session: 20 minutes. Posture: Sitting; Time of treatment: empty stomach. The patient was advised to take bath in hot water after the treatment.

Table:1 Tamil name, Botanical name, quantity of ingredients used in the preparation of erukku ilai Ottradam

TAMIL NAME	BOTANICAL NAME	QUANTITY
Erukku ilai	<i>Calotropis gigantea</i>	10-15 leaves
Veppennai	<i>Azadirachta indica</i>	Ample quantity

3.3. Preparation of erukku Ilai Ottradam

The leaves of erukku ilai (*Calotropis gigantea*) are stacked vertically and rolled up. One side of the rolled up edge was cut evenly and dipped in warm margosa oil (veppennai) to perform ottradam therapy in the affected area^[14]

3.4. Concomitant medication

Madhumega chooranam capsules - 2, bd with hot water was prescribed for diabetic control in addition to modern medicine. It was advised to take capsule madhumega chooranam 1hr after having the allopathy antidiabetic drugs.

3.5. Pathiyam (Diet)

The pathiyam (treatment diet) mentioned for vadha diseases was adhered during the treatment period. The diet free from sweet, sour taste, tubers, food with cold potency were avoided. Idli and primarily rice-based food prepared with vegetables, curry leaves, mint leaves etc, were provided.

Moreover sprouts, green leafy vegetables, butter milk and milk were also served during the treatment period.

4.Follow up and outcome

End of the treatment period (15 days), recorded SPADI index pain and severity score respectively 24/50 and 41/80 ie 74.6 % of deterioration was mitigated to 50%. The ROM and quality of life were improved well and ability to perform daily needs was rebuilt. The vital and routine blood investigation were with in reference renge. The blood fastind and postprandial sugar were 140mg/dl and 237 mg/dl respectively. The timeline of the clinical findings and details of range of motion of shoulder are portrayed in Table 2

Table2:Clinical Findings

Name	Day 1	Day 7	Day 14
Spadi index			
Pain	36/50	31/50	24/50
Disability	61/80	49/80	41/80
Blood sugar (Fasting) in mg/dl	277	194	140
Blood sugar (post prandial) in mg/dl	345	289	237
Siddha assessment			
Naadi (pulse)	Vatha pitham	Vatha pitham	Vatha pitham
Sparism (palpation)	Tendernes		
Naa (tongue examination)	Coated tongue. No visible fissures, gustation normal.	Coated tongue. No visible fissures, gustation normal.	Coated tongue. No visible fissures, gustation normal.
Niram (Colour)	Light brown	Light brown	Light brown
Mozhi (speech)	Normal pithced	Normal pithced	Normal pitched
Vizhi (eye examination)	No discoloration	No discoloration	No discoloration
Malam (stool examination)	Brown	Brown	Brown
Neerkuri (urine examination)	Yellowish to amber	Yellowish to amber	Yellowish to amber
Neikuri (Oil on urine sign)	Fast spread Snake pattern		Steady spread Snake pattern

Table 3: Measurement of Shoulder Movement with Goniometer and SPADI Score Before and After the Treatment period

Shoulder movement measured using goniometer	Before Treatment	After Treatment
Abduction (right)	120°	150°
Abduction (Left)	45°	90°
Forward Flexion (right)	160°	180°
Forward Flexion (Left)	45°	120°
Extension (right)	60°	60°
Extension (Left)	25°	50°
External rotation (Right)	90°	90°

External rotation (Left)	30°	80°
SPADI Score	74.6%	50%

The patient was closely followed and observed for 6 months and she had no aggravation of symptoms. There were no adverse reactions/events observed during the course of treatment. She was instructed to follow the pathiya (diet) advised.

5. Discussion

Frozen shoulder, a musculoskeletal disease widely seen in patients suffering with type 2 diabetes mellitus due to poor glycemic control. Use of SAID and NSAID are the central components in inflammatory management. ROM of affected joints are improved with routine practice of physiotherapy. Even Though, nowadays a surge of anxiety about the clinically proven adverse effect against NSAIDs and the expensive treatment pushes the patients towards the Siddha system of medicine^[16]. One of the basic body constituents, vatha humour was impaired in this patient which was observed in signs of Naadi (pulse) and Neikuri (Oil on urine sign)^[6,8,10]. To pacify the deteriorated vatha, purgation was given followed by otrradam therapy was started. 10 . Despite the patient was treated with allopathic oral hypoglycemic agents, the principal investigator of the study recommended siddha oral hypoglycemic agent known as tab.Madhumega chooranam 2 bd in hot water before meals otherwise exiting poor glycemic control might be provoke the sign and symptoms. Concomitantly low glycemic diet was highly recommended. Earlier the effect of otrradam therapy in osteoarthritis was reported. The exact mechanism behind the pain mitigation wasn't explained clearly. Erukku ilai otrradam (fomentation) ingredients have anti-vadha property which reduces the pain and inflammation. Fomentation, a form of thermotherapy, explained the mechanism of action of pain mitigation. During medicated heat oil application, heat sensitive calcium channels were opened thus increasing intracellular calcium. These channels are part of a family of receptors called TRPV receptors. TRPV1 and TRPV2 channels are sensitive to noxious heat, while TRPV4 channels are sensitive to normal physiological heat. Their multiple binding sites allow a number of factors to activate these channels. Once activated, they can also inhibit the activity of purine pain receptors. These receptors, called P2X2 and P2Y2 receptors, are mediated pain receptors and are located in the peripheral small nerve endings. For example, with peripheral pain, heat can directly inhibit pain. However, when pain is originating from deep tissue, heat stimulates peripheral pain receptors which can alter what has been termed gating in the spinal cord and reduce deep pain^[15]. Deep heating is supposed to reduce muscle spindle sensitivity to stretch, reduce nerve sensitivity, boost blood flow, increase tissue metabolism, relax muscles, and increase flexibility. Heat causes the production of bradykinin, which relaxes the smooth muscle walls and causes vasodilation, by stimulating the cutaneous thermoreceptors that are linked to the cutaneous blood vessels. Lowering the threshold of the muscle spindles and raising afferent activity cause muscle relaxation as a result of the gamma efferents' reduced firing rate. Additionally, there is a decrease in the alpha motor neuron's ability to fire on the extrafusal muscle fibre, which results in a relaxation of the muscles and a loss of muscular tone^[15]. The patient was advised to avoid tubers, sour taste.

6. Conclusion

The otrradam - siddha external therapeutic procedure has reduced the pain and disabilities which was measured by SPADI index and goniometer assessment. End of this study reduction of severity and disability was observed by SPADI index and goniometer. Outcome proves the effectiveness of treatment and minimal adverse effect. The strict adherence to the Siddha line of treatment and strict diet plan promotes the healing in patient. The findings in this single case study have given strong hope for management of Kumbavatham through non-pharmacological therapies. However randomised controlled clinical trials with large sample size are warranted to substantiate the result.

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