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Effect of exercise program on pain and tenderness with cyclic Mastalgia: A case report

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Abstract

Cyclic Mastalgia is defined as breast pain before the onset of menstruation and may be experienced unilaterally or bilaterally and is often related with tenderness. Pain usually diminishes spontaneously but it re-occurs with subsequent menstrual cycles. A 22 years old female student presents to the physiotherapy outpatient department with the chief complaint of bilateral breast pain more on right side upper quadrant which radiates the upper arm and axilla compare to left breast for 3 days. Pain is severe with usual activities and restricts her from doing upper limb activities and alters her sleeping position frequently. The outcome measures used were Visual Analogue Scale, and Pressure Algometer. Pre intervention scores were recorded and an exercise programme was administered to the participant, 3 times per week for 2 consecutive weeks. Post intervention outcome measures were recorded. After 2 weeks of intervention, there was significant reduction in pain and breast tenderness. After the intervention we observed that there was no recurrence of symptoms of cyclical mastalgia. This case report supports the clinical utility of structured exercise program for the treatment of cyclic mastalgia.

Keywords: Breast pain, cyclic mastalgia, menstrual cycle, structured exercise program

Introduction

Among the various complaints related to the breast, mastalgia or breast pain is the most common reason causing women to consult physicians, it may affect up to 70% of women in their lifetime [1, 2]. Cyclic mastalgia is defined as breast pain before the onset of the menstruation and subsides with the onset of the menstrual cycle [3]. The cyclic mastalgia symptoms can range from mild to severe and are typically experienced few days before the menstrual cycle, 67-75% of women under 55 report regularly experiencing premenstrual breast discomfort; 11-30% of women report moderate to severe breast pain lasting 5 days or more each mild premenstrual breast discomfort lasting 1-4 days is generally considered normal [3]. The pain may be experienced either unilaterally or bilaterally and is often associated with the tenderness [6].

Mastalgia is classified into three categories according to the Cardiff Mastalgia Clinic as follows: (1) cyclic mastalgia (associated with the menstrual cycle): The pain is typically experienced during the luteal phase of menstrual cycle and it is often associated with the ovulatory phase of the menstrual cycle. The presentation of the symptoms can be different in individuals, and the quality of the pain is often reported to be as sharp, shooting, stabbing, heaviness, aching, and throbbing. The pain is accompanied by tenderness of the breasts to deep palpation [6] (2) noncyclic mastalgia (not associated with the menstrual cycle): This pain is independent of the menstruation, and it has no specific pattern in which the condition presents. Pain is not felt all over the breasts but is often well localized to a particular region of the breast. The pain is often bilateral, and quality of pain is reported to be heavy, aching, fearful, burning, pulling, stabbing, and pinching. The breasts are tender on palpation [6], and (3) chest wall pain: This pain has no association with the menstrual cycle, and it has no specific pattern. It can be seen in all age groups and can occur at any time of the age. The pain is often unilateral as in rib pain, muscular pain, operative injury, or referred pain [6].

The etiology of cyclic mastalgia has not been established [4]. But according to few theories, cyclic mastalgia occurs due to the hormonal irregularities such as increased estrogen secretion from the ovaries, decreased levels of progesterone, and increased levels of prolactin [6, 7]. Circulating hormone levels appear normal in women with this disorder, but dietary fat and fatty acid metabolism appear to play some role.

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Psychological factors have been cited as well, but the little research in this area has been limited to investigation of psycho pathology, despite some suggestion that factors such as experienced stress may influence the development, severity or expression of this pain disorder [4]. Menstrual irregularity, oral contraceptives, hormone therapy, psychotropic drugs, some cardiovascular agents (i.e. spironolactone, digoxin), psychosocial factors, and emotional stress are related with breast pain. Caffeine and nicotine consumption are also considered to be related with mastalgia [2, 5].

There are studies where Yoga techniques, LASER, Kinesiology, and Primrose oil massage have been used in the treatment of cyclic mastalgia. There is lack in literature where specific, structured physiotherapy treatment has been used in the management of cyclic mastalgia [3]. Hence, the present case report was conducted to determine the outcome of structured exercise program on pain and tenderness in adult females with cyclic mastalgia.

Case Description

A 22 years old female student presents to the physiotherapy outpatient department with the chief complaint of bilateral breast pain which was more on right side upper quadrant which radiates the upper arm and axilla compare to left breast for 3 days, 5 days before onset of her menses and aggravated in the morning after waking up. On the first onset of her pain, she was advice for non-steroidal anti-inflammatory drugs for pain, by local practioner. After the recurrence of pain she visited a gynaecologist who prescribed her for medication and advise her for physiotherapy. She had dull aching pain. Pain is severe with usual activities and restricts her from doing upper limb activities and alters her sleeping position frequently. No other relevant past history or family history.

Physical Examination

Grade 3 tenderness mainly on upper quadrant painful and restricted flexion and abduction of shoulder but more abduction. Swelling is positive on upper quadrant. No other physical examination is positive.

Investigation: The patient underwent mammography and ultrasonography to rule out other related investigations for breast pain.

Outcome Measures

The patient pre intervention score of VAS scale for pain at resting is 8/10 and for shoulder flexion and extension is 7/10. Tenderness was checked by using algometer which is 6/kg on right side (upper quadrant).

Consent

After examination, the therapist explained the findings, about the procedure and the requirement of the procedure. And took her consent in written.

Management

Exercise/intervention

1. Pectoral stretching - The participant was made to sit on a chair; the therapist stands behind the participant. The participant was asked to bend both the elbows to 90° and shoulder to 90°. The therapist places her hands at the end of the elbow and passively pulls the hand behind. This position is maintained for 30 s and repeated.



Fig 1: The participant was made to sit on a chair; the therapist stands behind the participant.

- 2. Retractor strengthening (wall push-ups):** Participants were in the standing position facing toward the wall with feet apart, the shoulder is flexed to 90°, and the palms are placed on the wall. The participants were asked to go forward toward the wall bending their elbows and come back.



Fig 2: Participants were in the standing position facing toward

- 3. Trunk mobility exercises (trunk flexion, extension, rotation and lateral flexion)** - Participants were in the standing position, they were asked to stand with their feet slightly apart, and then ask the participant to perform trunk flexion, extension, lateral flexion to the right and left sides, and rotation to both the sides.
- 4. Breathing exercises a**
- Diaphragmatic breathing- Participant was in the sitting position. Asking them to place the palms on rectus abdominis, and instruct them to breathe slowly and deeply through the nose, and then participants

were instructed to relax and exhale through the mouth and draw the attention at the hand slightly rising during inspiration and going inward during expiration b.

- Segmental breathing (bilateral coastal expansion): The participants were in a sitting position with their hands being placed on the lateral aspect of the lower ribs bilaterally. They were asked to breathe in through the nose and breathe out through the mouth. At the end of the expiration, ask the patient to apply the manual resistance to the lower ribs.

5. Thoracic expansion

- To mobilize the upper chest and stretch the pectoral's muscles:

Patient position: The participant was made to sit in a chair with their both the hands clasped and placed behind the head. Instruct them to horizontally abduct her arms (this elongates the pectoralis major muscle) during a deep inspiration and followed by expiration while getting the elbows close together.

- To mobilize the upper chest and the shoulders:

Patient position: Participants were made to sit in a chair and perform a bilateral shoulder flexion of 180° with slight abduction while inspiration. This is followed by bending forward to reach the floor while exhaling.

Exercise dosage According to the new guidelines by American College of Sports Medicine

Stretching/flexibility exercise protocol

- Frequency: 30 s stretch with four repetitions;
- Intensity: mild to moderate; and
- Duration: 3 sessions/week

Strength/resistance exercises protocol

- Frequency: 4 sets with eight repetitions;
- Intensity: mild to moderate; and
- Duration: 3 sessions/week

Cardio/respiratory exercises

- Frequency: continuous session of 10 min;
- Intensity: mild to moderate; and
- Duration: 3 sessions/week

A structured exercise program was delivered to the participants three times per week for 2 consecutive weeks.

Post Intervention Scores

Scores of VAS for pain in resting was 3/10 and shoulder flexion and extension was 3/10. Tenderness checked with algometer was 3 on right upper quadrant of breast.

Discussion

To the best of our knowledge, this case report is different from previous studies as this is probably the first attempt in our Pravara Rural Hospital to determine the effect of a structured exercise program on pain and tenderness in adult females with cyclic mastalgia. The present study assessed

the pain scores for the breasts by using a VAS at baseline and after the intervention.

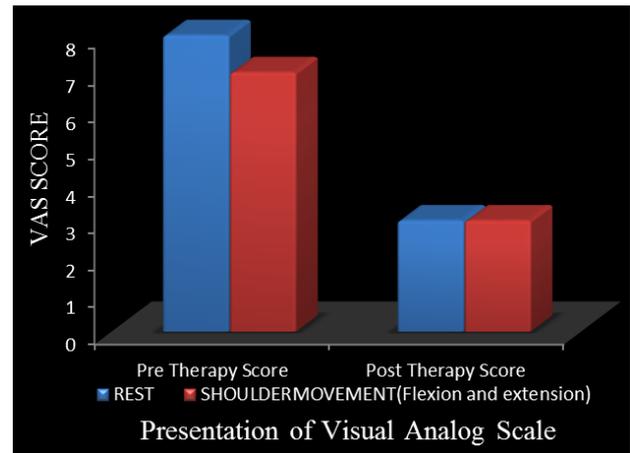


Fig 3: Presentation of VAS at Rest and Shoulder movements (Flexion and extension)

In the present study, the exercise intervention proved to be effective in decreasing pain as the literature suggests that when regular physical activity or exercises are performed, it enhances the return of blood to the heart and improves the blood circulation to the entire body. Another reason is that when exercises are performed, it helps in the release of prostaglandins into the body which in turn reduces or prevents pain and the associated discomfort^[8, 3]. This can be positively correlated to the present study in which we included the exercises focusing mainly on the upper body which might have enhanced the blood circulation and flow, especially to the pectoral muscles, retractors, trunk flexors, extensors, rotators, side flexors, etc. Another reason could be that exercises help in increasing the brain neurotransmitters of the body, especially the endorphins. The mechanism of the action of endorphin is that it resembles to be a body's own natural painkiller which helps in giving analgesic and pain relieving effect. Endorphins help in reducing a hormone named cortisol which is addressed as the stress hormone and is one of the determinants in the etiologic of the cyclic mastalgia. Due to this, the adrenal gland releases less amount of cortisol which reduces the pain^[8]. Literature suggests that when exercises are performed, they help in regulation of the hormones, especially estrogen and progesterone, which is one of the main cause of cyclic mastalgias and hence exercises help in regulating the hormonal imbalance and in turn help in reducing the breast pain.

The breast tenderness scores were also assessed in the present study using the pressure algometer with pre-intervention tenderness score of 6/kg and post-intervention tenderness score of 3/kg, respectively. The reduction in the breast tenderness may be due to the stretching of pectoral muscles which results in stretching of the muscle fibres and thus reduces the tender points which get generated due to pain.

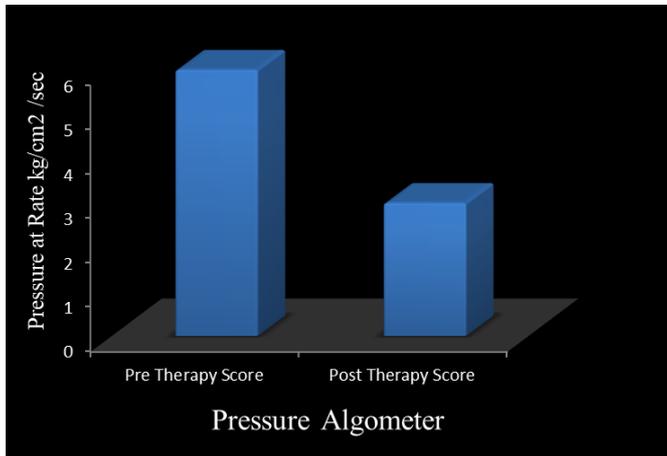


Fig 4: Assessment of Tender pain using Pressure Algometer

Determining the long-term effects of the exercise program was not an objective of the present case study; though, we found that there was no reoccurrence of the indications of cyclic mastalgia in our study participant for more than 3 months after the intervention. This shows that the intervention was effective in reducing the symptoms of mastalgia.

Conclusion

This case report supports the clinical utility of structured exercise program for the treatment of cyclic mastalgia.

Limitations and Recommendations

Results of a case study cannot be generalised in a larger sample size. Follow up of the patient was not done. Long term effectiveness could be studied to provide a better understanding of the treatment parameters.

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