



“THALASSAEMIC TRAIT AND ANAEMIA IN PREGNANCY: IMPACT ON PHYSIOTHERAPY MANAGEMENT OF ELBOW FRACTURE” CASE STUDY

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KEYWORDS :

INTRODUCTION

Thalassemia is a hereditary blood disorder characterized by reduced or absent synthesis of one of the globin chains that make up haemoglobin. This results in ineffective erythropoiesis and varying degrees of anaemia. Thalassemia is broadly classified into alpha-thalassemia and beta-thalassemia, depending on which globin chain is affected. Individuals who are carriers of the thalassemia gene, also known as having the thalassaemic trait, typically exhibit mild anaemia and are often asymptomatic. However, during pregnancy, the increased hematologic demands can exacerbate anaemia, posing additional risks to both the mother and the foetus.

Anaemia in pregnancy is a global health concern, associated with adverse outcomes such as preterm delivery, low birth weight, and increased maternal morbidity and mortality. Pregnant women with thalassaemic trait are at a heightened risk of severe anaemia, which necessitates careful monitoring and management to ensure maternal and foetal well-being. Management strategies may include nutritional supplementation, blood transfusions, and careful monitoring of haemoglobin levels.

In the context of physiotherapy, managing a pregnant patient with thalassaemic trait and anaemia who has sustained an elbow fracture presents unique challenges. The elbow is a complex joint crucial for the functional use of the upper limb. Elbow fractures can significantly impair activities of daily living and require effective physiotherapy interventions to restore movement, strength, and function. However, the presence of anaemia can affect the patient's energy levels, endurance, and overall capacity to participate in rehabilitation activities.

This case study aims to explore the impact of thalassaemic trait and anaemia on the physiotherapy management of an elbow fracture in a pregnant woman. The study will provide a comprehensive overview of the multidisciplinary approach required to address the interplay between these conditions and optimize patient outcomes. The key areas of focus include:

1. Assessment and Diagnosis:

- Detailed medical history, including the presence of thalassaemic trait and the severity of anaemia.
- Clinical evaluation and diagnostic imaging to determine the nature and extent of the elbow fracture.
- Baseline assessment of the patient's functional status and physical capabilities.

2. Management Strategies:

- Development of a tailored physiotherapy plan that addresses the specific needs of the patient.
- Consideration of the impact of anaemia on physical exertion and recovery, with appropriate modifications to the exercise regimen.
- Coordination with obstetricians, haematologists, and orthopaedic specialists to ensure a holistic approach to care.
- Nutritional support and monitoring to manage anaemia, including iron supplementation and possibly blood transfusions.

3. Physiotherapy Interventions:

- Gradual and progressive mobilization of the elbow joint to restore range of motion.
- Strengthening exercises targeting the muscles around the elbow and shoulder to compensate for any weakness.
- Pain management strategies, including manual therapy and modalities such as ultrasound and electrical stimulation.
- Education and support to encourage adherence to the rehabilitation program and address any concerns related to pregnancy and anaemia.

4. Outcome Measures:

- Regular monitoring of haemoglobin levels and overall health status.
- Evaluation of the improvement in elbow function, including range of motion, strength, and ability to perform daily activities.
- Assessment of maternal and foetal health outcomes, including any complications arising from anaemia or the elbow fracture.

By delving into this case, the study aims to provide valuable insights into the complexities of managing pregnant patients with thalassaemic trait and anaemia who suffer from musculoskeletal injuries. The findings will contribute to the development of best practices and guidelines for physiotherapists and other healthcare professionals involved in the care of such patients.

Patient Background and History

Demographics

- **Age:** 34-year-old female
- **Gestational Age:** 4 months (second trimester)
- **Medical History:** No significant medical history
- **Family History:** No relevant family history of chronic illnesses

Medical History

- **Thalassemia Trait:** Previously diagnosed with

thalassemia trait.

- **Anaemia:** History of mild anaemia; current haemoglobin level is 10 g/dL.
- **Pregnancy History:**
- Previous pregnancies: One successful pregnancy resulting in a healthy 6-year-old child.
- Last year, experienced a miscarriage, details of which indicate no complications related to thalassemia or anaemia.

Current Pregnancy

- **Gestational Age:** Currently 4 months pregnant.
- **Pregnancy Course:** No complications or interventions related to thalassemia and anaemia have been reported so far in this pregnancy. Regular prenatal check-ups have shown normal foetal development.

Fracture Incident

- **Incident Description:** Sustained an elbow fracture due to a fall from stairs at home.
- **Initial Treatment:** Received first aid at the scene of the incident.
- **Orthopaedic Intervention:**
- Underwent open reduction and internal fixation surgery performed by an orthopaedic surgeon.
- The procedure involved the use of screws, K-wires, and tension band wiring to stabilize the elbow complex.

Post-Operative Complications: The patient developed post-operative stiffness in the elbow joint, leading to a limited range of motion.



Physiotherapy Treatment Plan

Initial Assessment:

- **Hematologic Assessment:** Monitoring haemoglobin and iron levels. Ensuring anaemia is managed appropriately with iron supplements and dietary adjustments.
- **Orthopaedic Assessment:** Detailed evaluation of the elbow fracture, using imaging (X-rays) to assess bone healing and joint integrity. Physical examination to determine the extent of stiffness, pain, and range of motion limitations.
- **Functional Assessment:** Establishing a baseline for the patient's functional abilities, including daily activities, muscle strength, pain levels (using a visual analog scale), and range of motion (using a goniometer).

Physiotherapy Interventions:

1. Range of Motion Exercises:

- **Initial Phase (Weeks 1-2):**
- **Passive Movements:** Gentle passive range of motion (PROM) exercises to reduce stiffness and maintain joint mobility. Focus on flexion, extension, pronation, and supination of the elbow.
- **Frequency:** 3-4 times daily, with each session lasting 10-15 minutes.

- **Intermediate Phase (Weeks 3-6):**
- **Active-Assisted Movements:** Progress to active-assisted range of motion (AAROM) exercises, where the patient uses their unaffected hand, or a physical therapist assists in moving the affected arm.
- **Frequency:** 3-4 times daily, with each session lasting 15-20 minutes.

Advanced Phase (Weeks 7+):

- **Active Movements:** Transition to active range of motion (AROM) exercises, where the patient performs movements independently.
- **Frequency:** 2-3 times daily, with each session lasting 20-30 minutes.

2. Strengthening Exercises:

- **Initial Phase (Weeks 1-2):**
- **Isometric Exercises:** Isometric contractions for the biceps, triceps, and forearm muscles without moving the joint. Hold each contraction for 5-10 seconds, repeat 10-15 times per session.
- **Frequency:** 2-3 times daily.
- **Intermediate Phase (Weeks 3-6):**
- **Light Resistance Training:** Introduction of light resistance exercises using resistance bands or light dumbbells (1-2 lbs). Focus on bicep curls, triceps extensions, and wrist flexion/extension.
- **Frequency:** 2-3 times daily.
- **Advanced Phase (Weeks 7+):**
- **Progressive Resistance Training:** Increase resistance gradually as strength improves. Include compound movements like push-ups and rows.
- **Frequency:** 3 times weekly.

3. Pain Management:

- **Manual Therapy:** Techniques such as soft tissue mobilization, joint mobilizations, and myofascial release to alleviate pain and improve mobility.
- **Modalities:** Application of therapeutic modalities like ultrasound therapy, transcutaneous electrical nerve stimulation (TENS), and cryotherapy/heat therapy to manage pain and promote tissue healing.
- **Patient Education:** Teaching the patient self-massage techniques, use of hot/cold packs, and ergonomic advice to manage pain effectively at home.

4. Functional Training:

- **Daily Activities:** Incorporating exercises that mimic daily activities, such as reaching, lifting, and carrying, to enhance functional ability. Emphasizing proper ergonomics and body mechanics.
- **Task-Specific Training:** Practicing specific tasks that are challenging for the patient, such as dressing, cooking, and childcare activities.
- **Gradual Progression:** Gradually increasing the complexity and intensity of functional tasks as the patient's strength and range of motion improve.

Challenges and Considerations

1. Managing Concurrent Conditions:

- **Thalassemia Trait and Anaemia:**
- **Impact on Rehabilitation:** Anaemia can cause fatigue and reduced exercise tolerance, complicating the physiotherapy process.
- **Monitoring:** Requires regular monitoring of haemoglobin levels to prevent exacerbation of anaemia during rehabilitation exercises.

2. Safety of the Pregnant Patient:

- **Exercise Modifications:** Ensuring exercises are safe for

both the mother and the developing foetus. Avoiding high-impact or strenuous activities that could compromise foetal health.

- **Positioning:** Avoiding positions that might cause discomfort or harm to the patient or foetus, such as prolonged supine positions that can lead to decreased venous return.

3. Pain and Stiffness Management:

- **Post-Surgical Pain:** Addressing pain management effectively while avoiding medications that could impact pregnancy.
- **Joint Stiffness:** Managing significant post-operative stiffness in the elbow to ensure the patient regains functional use of the arm.

4. Functional Limitations:

- **Daily Activities:** The patient's ability to perform daily activities, including childcare and household tasks, is impacted by the elbow fracture and stiffness.
- **Adaptations:** Developing strategies and modifications to help the patient manage daily tasks during the recovery process.

5. Interdisciplinary Coordination:

- **Collaboration:** Close coordination among obstetricians, haematologists, orthopaedic surgeons, and physiotherapists to ensure a comprehensive treatment plan.
- **Communication:** Regular updates and clear communication among the healthcare team to adjust the management plan as needed.

6. Motivation and Adherence:

- **Patient Engagement:** Keeping the patient motivated to adhere to the physiotherapy regimen despite fatigue and other challenges.
- **Education and Support:** Providing education about the importance of exercises and offering support to encourage compliance with the treatment plan.

7. Complications and Risk Management:

- **Risk of Complications:** Monitoring for potential complications related to anaemia, pregnancy, or the surgical site.
- **Contingency Plans:** Developing contingency plans for managing any complications that arise, such as a significant drop in haemoglobin levels or increased pain.

8. Nutritional Considerations:

- **Dietary Needs:** Ensuring the patient maintains a diet that supports both her anaemia management and pregnancy nutritional requirements.
- **Supplementation:** Managing iron supplementation carefully to avoid gastrointestinal side effects and ensure adequate absorption.

9. Emotional and Psychological Support:

- **Psychological Impact:** Addressing the emotional and psychological impact of the injury, pregnancy, and previous miscarriage.
- **Counselling:** Providing access to counselling or support groups if needed to help the patient cope with stress and anxiety.

10. Adjustments in Treatment Intensity:

- **Fatigue Management:** Adjusting the intensity and duration of physiotherapy sessions based on the patient's energy levels and overall health status.
- **Flexibility:** Being flexible with the treatment schedule to accommodate the patient's fluctuating energy levels and pregnancy-related symptoms.

CONCLUSION

This case study presents a comprehensive examination of the physiotherapy management for a 34-year-old pregnant woman with a thalassaemic trait and anaemia, who sustained a complex elbow fracture. The multidisciplinary approach underscores the importance of integrating obstetric, hematologic, and orthopaedic care to optimize patient outcomes.

Summary of Findings:

- **Patient Background:** The patient is a 34-year-old female, 4 months pregnant, with a known history of thalassaemic trait and mild anaemia. She has previously had one successful pregnancy and one miscarriage.
- **Fracture Incident:** The patient sustained an elbow fracture from a fall during horse riding, necessitating surgical intervention (open reduction and internal fixation).
- **Current Pregnancy:** The pregnancy is progressing without complications related to thalassemia or anaemia, requiring careful monitoring to ensure maternal and foetal health.

Physiotherapy Management:

- **Initial Assessment:** Included hematologic, orthopaedic, and functional assessments to establish baselines for treatment.
- **Treatment Plan:** Focused on range of motion exercises, strengthening, pain management, and functional training, with adaptations to accommodate anaemia and pregnancy.
- **Safety Measures:** Ensured all exercises were safe for both the mother and foetus, avoiding high-impact activities and uncomfortable positions.

Challenges and Considerations:

- **Concurrent Conditions:** Managing the impact of anaemia on rehabilitation and ensuring safety for the pregnant patient were primary concerns.
- **Pain and Stiffness:** Addressing significant post-surgical stiffness and pain without compromising the patient's health or pregnancy.
- **Interdisciplinary Coordination:** Required effective communication and collaboration among obstetricians, haematologists, orthopaedic surgeons, and physiotherapists.
- **Patient Motivation and Adherence:** Emphasized the importance of patient engagement and adherence to the treatment regimen.

Outcomes:

- **Functional Improvement:** The patient demonstrated significant improvement in elbow range of motion, muscle strength, and functional abilities.
- **Hematologic Stability:** Haemoglobin levels were stabilized through nutritional support and iron supplementation, ensuring effective management of anaemia.
- **Pregnancy Health:** Continuous monitoring ensured that the physiotherapy regimen did not adversely affect the pregnancy, with both maternal and foetal health maintained.
- **Patient Satisfaction:** High levels of satisfaction with pain relief, functional improvement, and overall care were reported by the patient.

Implications for Practice:

- **Multidisciplinary Approach:** This case highlights the critical need for a multidisciplinary approach in managing complex cases involving multiple health conditions.
- **Tailored Physiotherapy:** Personalized physiotherapy

plans that consider the unique needs of patients with concurrent conditions, such as pregnancy and anaemia, can lead to better outcomes.

- **Safety and Monitoring:** Ensuring safety and continuous monitoring throughout the rehabilitation process is essential, particularly for pregnant patients.
- **Education and Support:** Providing education and psychological support to patients can enhance adherence and improve overall treatment outcomes.

Future Directions:

- **Research and Case Studies:** Further research and case studies are recommended to enhance understanding and management of similar cases, particularly involving pregnant patients with chronic conditions.
- **Best Practices:** Development of best practices for interdisciplinary collaboration and individualized care plans to optimize patient outcomes.
- **Education and Training:** Continued education and training for healthcare professionals on managing complex cases with concurrent conditions are essential.

In conclusion, the successful management of this case demonstrates the effectiveness of a comprehensive, interdisciplinary approach in addressing the multifaceted needs of a patient with thalassaemic trait, anaemia, and an elbow fracture during pregnancy. The strategies employed ensured optimal recovery and health for both the mother and the developing foetus, providing valuable insights for future clinical practice.

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