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EFFECTIVE HOMEOPATHIC MANAGEMENT IN ACUTE EMERGENCIES OF VASO-OCCLUSIVE CRISIS IN SICKLE CELL DISEASE: A CASE STUDY

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ABSTRACT: Vaso-occlusive crisis (VOC) is a hallmark acute complication of Sickle Cell Disease (SCD) characterized by severe pain due to microvascular occlusion. This case study presents a 12-year-old male diagnosed with SCD experiencing recurrent VOC episodes. The patient was managed using individualized homeopathic intervention, demonstrating significant pain reduction, highlighting homeopathy's potential as a complementary treatment approach. This study evaluates the patient's outcomes using the Wong-Baker FACES Pain Rating Scale, demonstrating a pain score reduction from 10 to 0 within two hours of intervention.

KEYWORDS: Homeopathy, Sickle Cell Disease, Vaso-occlusive Crisis, Lachesis, Pain Management, Wong-Baker FACES Pain Rating Scale, Miasm, Psoro-syphilitic.

INTRODUCTION

Sickle Cell Disease (SCD) represents one of the most prevalent inherited blood disorders worldwide, significantly impacting global health. SCD is caused by a mutation in the β-globin gene, where the sixth amino acid is altered from glutamic acid to valine, leading to the production of abnormal hemoglobin S (HbS) instead of normal hemoglobin A.[1] This single-point mutation underlies the pathophysiology of the disease, where deoxygenated HbS polymerizes, causing red blood cells to become rigid and sickle-shaped, impairing their function and leading to various complications.[2] Globally, approximately 300,000 infants are born with SCD each year, with the highest incidence in sub-Saharan Africa, India, and other regions with significant populations of African descent. In India, SCD affects around 1-3% of the tribal population, contributing substantially to infant and childhood mortality. Despite advancements in medical care, the mortality rate for children under five years remains high, particularly in low-resource settings. [3] The hallmark of SCD is the Vaso-occlusive crisis, where sickled shaped red blood cells obstruct blood flow, causing severe pain and organ damage. These crises often manifest acutely, with pain episodes lasting from 2 to 6 days, commonly affecting the chest, abdomen, long bones, and joints.[1,2,4] Complications include growth failure, psycho-social problems, recurrent infections due to splenic infarcts and auto-splenectomy, aplastic crises, and splenic sequestration crises. Organ damage, particularly involving the heart and kidneys, is prevalent in adults, while cerebral complications like strokes are more frequent in children. Acute hepatic involvement, presenting with right upper quadrant pain, fever, and jaundice, may also occur, sometimes precipitated by infections or folic acid deficiency.[1,2,5] Management of SCD encompasses general care and specific interventions aimed at preventing and treating complications. General care includes pain relief, hydration, fever management, and psycho-social support. Nutritional advice emphasizes adequate intake of calories, folic acid, vitamins C and E, and zinc. Specific interventions involve prophylactic antibiotics, immunizations, and management of febrile episodes. Blood transfusions are employed to manage severe anemia and reduce the risk of stroke, while many anti-sickling agents developed as a newer therapeutic modalities.[2,6] Despite the high prevalence of SCD, there is a significant gap in homeopathic research and clinical guidelines addressing its management. Current treatment strategies primarily focus

on hydroxyurea therapy, blood transfusions, and bone marrow transplantation, with limited exploration of alternative systems like homeopathy.[14] This highlights the need for integrative approaches that could potentially enhance the well being of person and reduce disease-related mortality for SCD patients.

CASE PRESENTATION

A pre-diagnosed case of Vaso-Occlusive crisis in Sickle cell disease with SS pattern presented on 04/09/2022 with severe throbbing pain in all small joints, both knees, hands and legs with cramping pain in abdomen and continue low grade fever and weakness which is aggravated during sleep and pain ameliorated by taking care of animals and watching them. **How homoeopathic physician get this case?** Patient was repeatedly admitted in hospital 4 times in a month of August 2022 for the severe pain which is diagnosed as Vaso-occlusive crisis of SCD. For same painful crises he was again hospitalized on 02/09/2022 in evening and got discharge from hospital at next day on 03/09/2022 in evening. Later on 04/09/2022 morning, homoeopathic physician were called to see him and at same day evening VOC episode again started, so homoeopathic physician was called for the help by sending patient video. **Onset Duration Progress:** The current episode began suddenly, characterised by severe abdominal and joint pain, the patient reported the pain persistent for approximately 20-30 minutes before seeking homoeopathic medicinal attention till patient where given convention medication but pain intensity escalated quickly, reaching a score of 10 on the Wong-Baker FACES Pain Rating Scale. The pain exhibited restlessness, hitting the bed and moaning due to pain. **Birth and Development History:** Patient was reportedly healthy at birth, with no complications. Family History of Both parents and a sibling carry the sickle cell trait (AS pattern). Patient was diagnosed with the SS pattern of Sickle Cell Disease at 4 years of age. First major hospitalization occurred at 6 year of age due to severe abdominal and joint pain. Since then, recurrent hospitalizations were necessary, typically every 2–4 weeks. Patient physical appearance was Lean and thin. On general examination Appetite was decreased during crises. Thirsty, consuming water frequently. Urine frequency 5–6 times/day, Black stools**,** Sleep Frequently disturbed due to pain. Thermally Hot patient (prefers cold environment). **Investigations at the Time of Discharged from Hospital:**

Haematology: Haemoglobin: 10.6 g/dL, WBC: 10.83 x 10^9/L**,** Platelets: 142 x 10^9/L. **Liver Function Test (LFT):** Total Bilirubin: 1.8 mg/dL, SGOT: 10 mg/dL, SGPT: 15 mg/dL. **Kidney Function Test (KFT):** Urea: 16 mg/dL (on first visit before medicinal intervention), Creatinine: 0.5 mg/dL, Sodium: 137 mg/dL, Potassium: 3.9 mg/dL. **Peripheral Smear:** Microcytic hypochromia with Aniso-poikilocytosis detected. Reticulocyte count: 3.61%. **Abdominal Ultrasound:** Cholelithiasis with mild splenomegaly detected. Patient was on Conventional medicational doses as Tab Folic Acid OD, Tab PCM 300mg (1/2 tab) PO OD, Tab Hydroxyurea (1/2 tab) PO OD, Syp Zincort 5ml PO OD, Syp Calcimax P 5ml PO OD.

Mental and Emotional State:

Disposition and Behaviour: A talkative, affectionate, and caring child. Loves animals and has adopted lovebirds and street dogs.

Coping During Crises: Exhibits restlessness and despair. Experiencing constant, overwhelming pain that leads to thoughts of suicide.

Observations by Practitioner: During the consultation, the patient was observed to be hitting bed due to pain with restlessness and moaning.

Emotional Traits During Normalcy: Mischievous but loving, Demonstrates kindness. carefulness and thoughtfulness toward others (insisted on serving tea to the practitioner during consultation at his home

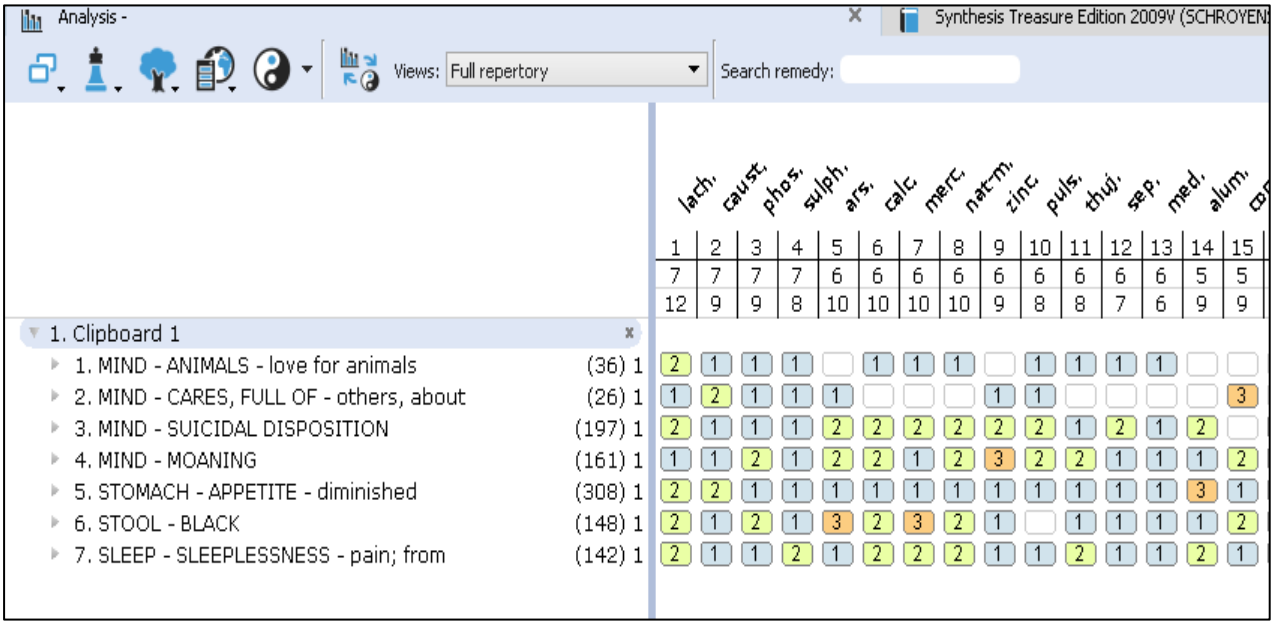
ASSESSMENT WITH SCALES BEFORE HOMOEOPATHIC INTERVENTION:

The Wong-Baker FACES Pain Rating Scale was utilized to evaluate pain intensity **before and after intervention. (Picture were taken from video clips of patient)**

Baseline Score: 10 (severe pain)

Figure 1

RUBRICS AND REMEDIAL ANALYSIS



Rx,

Lachesis 1M, 3doses in 10-minute interval in Sacchrum lactis

Cosmos given every 1 hourly for 24 hours

FOLLOW UP TABLE (Table 1)

Date	Symptoms >	Interpretation	Action
4/9/22 (After 10min video)	Moaning, restlessness and pain Reduced in intensity to 5 to 6 points on WB FACES Pain Rating Scale within 10 min	Remedy acted very well and moaning, restlessness and intensity of pain reduced	2 more doses of Lachesis 1M was given
4/9/22 (At 10 pm video call)	Moaning, restlessness and pain reduced in intensity to 0 points on WB FACES Pain Rating Scale with smiling on his face after 2 hours	Patient become stable and slept well	Placebo continued
05/9/22(1st follow up in morning)	No episode of pain	Patient was Stable	Placebo continued
22/9/22	No episode of pain	Patient was Stable	Placebo continued
13/10/22	No episode of pain	Patient was Stable	Placebo continued

15/11/22	No episode of pain	Patient was Stable	Placebo continued
19/12/22	No episode of pain	Patient was Stable	Placebo continued
30/01/23	ONE EPISODE OF PAIN COOMES	Remedy was repeated in Same potency	Only 1 dose of Lachesis 1M was given
16/02/23	No episode of pain	Patient was Stable	Placebo continued

Till date 18/12/2024 patient is stable and does not get any episode of Vaso-occlusive crisis

ASSESSMENT WITH SCALES AFTER HOMOEOPATHIC INTERVENTION

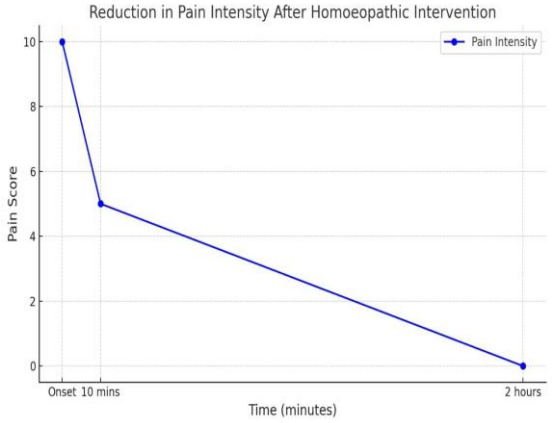
The Wong-Baker FACES Pain Rating Scale was utilized to evaluate pain intensity before and after intervention. **(Picture were taken from video clips of patient).**

Baseline Score: 10 (severe pain).

Post-Intervention: Pain reduced to 6-5 after 10 minutes and 0 after two hours.

Figure 2

RESULT



The graph demonstrates the reduction in pain intensity over time. The patient experienced rapid and complete pain relief after homeopathic intervention, with noticeable improvement within just 10 minutes, and complete relief by 2 hours.

DISCUSSION

Sickle cell disease is a genetic mutational disorder caused by a single nucleotide substitution in the beta-globin gene. Specifically, a thymine (T) replaces adenine (A) at codon 6, resulting in the replacement of glutamic acid with valine in the beta-globin chain. This alteration causes the formation of an abnormal hemoglobin, referred to as hemoglobin S (HbS). Under low oxygen conditions, HbS causes red blood cells to assume a rigid, sickle-like shape. These misshapen cells are less flexible, leading to vascular blockages and various clinical manifestations characteristic of sickle cell disease.[2] Vaso-occlusive crises are believed to occur because of adherence of sickled RBCs to the vascular endothelium, adherent leukocytes, and platelets in small blood vessels.[7] Repeated crises requiring hospitalization (>3 episodes per year) correlate with reduced survival in adult life, suggesting that these episodes are associated with accumulation of chronic end-organ damage.[1] Vaso-occlusion causes protean manifestations. Intermittent episodes of Vaso-occlusion in connective and musculoskeletal structures produce ischemia manifested by acute pain and tenderness, fever, tachycardia, and anxiety. hydroxyurea therapy has emerged as a standard treatment. European Medicine Agency (EMA) has approved only Hydroxyurea.[4] Hydroxyurea, by inducing fetal hemoglobin (HbF) synthesis, reduces the frequency of Vaso-occlusive crises and helps preserve organ function. Despite its benefits, hydroxyurea is contraindicated during pregnancy, and its use in conjunction with other hematopoietic agents is under investigation.[2,7] The large scale study, conducted across the largest European population of patients with sickle cell disease (SCD), demonstrated a strong link between hospital visits for vaso-occlusive crises (HVOCs) and both mortality and various SCD-related complications. Despite advancements in managing both SCD and HVOCs, patients continue to face a higher risk of death with an increasing number of HVOCs. Additionally, the risk of severe complications rises as the frequency of HVOCs increases, particularly in cases of acute chest syndrome (ACS), sepsis, osteonecrosis, acute kidney injury, and pulmonary embolism.[14] Better management of HVOCs is needed not only to improve the patients' well-being, but also to prevent premature mortality, and debilitating complications.[8] This case presents homoeopathic management for pre-diagnosed case of Vaso-occlusion crisis in sickle cell disease (SCD) presented on 04/09/2022. The current episode began suddenly, characterised by severe abdominal and joint pain, the patient reported the pain persistent for

approximately 20-30 minutes. and with continuous low-grade fever and weakness which is aggravated during sleep and pain ameliorated by taking care of animals and watching them. Pain intensity increased quickly, reaching a score of 10 on the Wong-Baker FACES Pain Rating Scale. The pain exhibited restlessness, hitting the bed and moaning due to pain. After thorough case analysis and repertorization by using homoeopathic software Radar Opus Lachesis 1M was prescribed. After intervention of homoeopathic medicine pain intensity of crisis decrease in next 2 hours as shown in fig 1. Later on, next 6 months regular follow up was taken. (Table 1) After 3 month one episode of crisis came with severe abdominal pain where Lachesis 1M one dose was prescribed again. Later on, No episodes of recurrence of crisis were seen till date.

Sickle cell Disease caused due to genetic mutation where there is sickle shaped RBC in blood responsible for further Haemolysis in which destruction of RBC occurs which comes under Syphilitic Maism.[9] But when there cells adhere to blood vessels and hindered the flow of blood to important organ which leads to deprived of Oxygen to tissues and started inflammatory process (Produce Vaso Occlusive Crisis) that inflammatory stage comes under Psoric Maism where patient present with severe pain and other symptoms.[10] This forms compound disease i.e. Psoro-Syphilitic condition.[11]

LEARNING POINT: Application of Theory of Miasm in correlation with Patho-Physiology in progressive disease conditions gives better understanding to manage Acute Emergency crises.[12] Totality of this case based on Syphilitic Mental Symptoms (Person state in disease condition) and Syphilitic General symptoms along with Patho-physiological Action of induvialised homoeopathic medicine to come out of this Acute crisis.

STATISTICAL ANALYSIS

The primary objective of the analysis was to determine the statistical significance of the reduction in pain scores following the intervention. Pain scores were recorded at intervals 10, 6, and 0. A single-sample t-test was performed to assess the magnitude of change in pain scores over time. The mean pain score was calculated as 5.33, with a standard deviation of approximately 5.08. The t-value was computed as approx 3.41. The calculated t-value was compared against the critical value of the t-distribution at degree of freedom (df) = 2. For a one-tailed test (testing a directional hypothesis that the intervention reduced pain scores), the p-value was 0.038, which is below the standard significance threshold of ($\alpha = 0.05$). This indicates a statistically significant reduction in pain scores.

CONCLUSION

The calculated t-value of approximately 3.41 indicates a statistically significant reduction in pain scores after the homeopathic intervention. This suggests that the treatment was effective in reducing pain in this patient with Sickle Cell Disease (SCD) experiencing a Vaso-occlusive crisis (VOC).

LIMITATIONS

While the results are promising, it's essential to note that this is a single-case study, and the findings may not be generalizable to other patients. Further research with larger sample sizes and controlled studies is necessary to confirm the efficacy of homeopathic interventions in managing VOC in SCD patients.

COMPARISON WITH LITERATURE

Studies emphasize the multifactorial aetiology of VOC, including inflammatory and vascular dysfunction. Hydroxyurea remains the standard care, but it has limitations in rural and resource-poor settings. Homeopathy could complement these treatments, especially in populations with limited access to healthcare.

DECLARATION OF PATIENT CONSENT:

The patient's guardian provided written informed consent and video testimonial for the publication of clinical details and images.

PATIENTS PERSPECTIVE

The patient reported feeling significantly better post-treatment and expressed hope for managing future crises with homeopathy.

CONFLICT OF INTERESTS

None declared.

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