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CASE REPORT ON HEMIARTHROPLASTY OF HIP DONE IN PATIENT WITH SICKLE CELL ANEMIA

Orthopaedics

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ABSTRACT

Orthopedic issues associated with sickle cell disease (SCD) encompass bone pain due to blocked blood vessels, osteonecrosis, and infections such as osteomyelitis, septic arthritis and pathological fractures [1]. People with SCD lack functional spleens, increasing their susceptibility to potentially life-threatening infections. This article explains about role of hemi-arthroplasty in pathological neck of femur fracture in a patient with sickle cell disease with good post operative outcome [2].

KEYWORDS

Sickle cell disease, arthroplasty, orthopaedic manifestations, rehabilitation.

INTRODUCTION

Sickle Cell Disease (SCD) is a hereditary condition caused by a mutation in the haemoglobin gene. This mutation leads to the substitution of glutamic acid with valine at the sixth position of the beta-globin chain, resulting in haemoglobin altering its shape when oxygen levels are low [3]. Consequently, red blood cells become stiff and sickle-shaped, losing their usual flexibility. These deformed cells can obstruct capillaries and disrupt blood flow throughout the body [4]. The primary clinical effects of Sickle Cell Disease (SCD) are due to vaso-occlusion and chronic haemolysis, which cause endothelial damage and ischemic reperfusion injuries [5], [6]. SCD affects both skeletal and extra-skeletal tissues [7]. In the skeletal system, it can impact individuals of all ages, with bone alterations resulting from bone marrow hyperplasia and thrombosis leading to vascular infarction. The most frequent skeletal manifestation is painful vaso-occlusive crises [8], [9].

Case Report

This patient presented with acute left hip pain and difficulty walking, without a history of significant trauma but did report forcefully sitting on a couch recently. The patient, a 75-year-old female with a history of sickle cell disease, diabetes, and cardiac disease (managed with oral hypoglycemics and blood thinners), had a history of multiple transfusions due to low hemoglobin levels and a tendency to bruise easily [10], [11].

Diagnostic workup, including an X-ray, revealed a transverse fracture of the neck of the femur (Figure 1). Her complete blood count showed low hemoglobin (8 g/dl) and reduced platelet count, with a peripheral smear confirming sickle cells. Due to her medical complexity, specialists in medicine, anesthesia, and hematology were consulted [12].

After obtaining anesthesia clearance, the patient underwent cemented bipolar hemiarthroplasty. Post-operatively, she received 2 units of packed red blood cells and 4 units of random donor platelets over two days. She was closely monitored in the ICU, with anticoagulant therapy withheld until her platelet count improved [13], [14], [20].

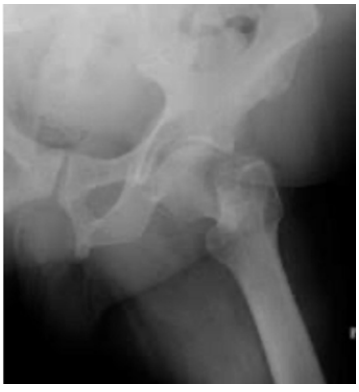

Figure 1: Pre-surgical x-ray

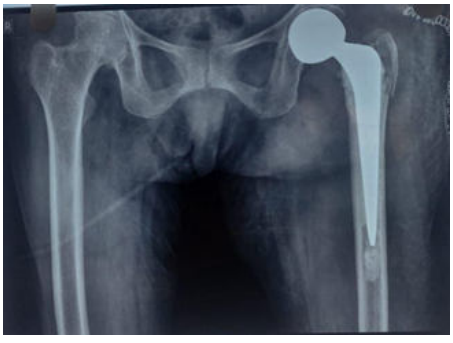

Figure 2: Post-op radiograph

Figure 3: Clinical outcome

Post-operative X-rays showed satisfactory results (Figure 2) and she underwent gradual mobilization with exercises and walker-assisted walking (Figure 3). Four weeks later, she progressed to mobilizing without the walker [15],[16].

This case highlights the importance of a multidisciplinary approach in managing acute hip fractures in patients with complex medical histories, such as sickle cell disease. Careful pre-operative planning and post-operative management are essential for achieving optimal outcomes [19], [21].

DISCUSSION

Because sickle-shaped cells create microthrombi, sickle cell disease causes serious skeletal problems, including pathological fractures, avascular necrosis, and weakening of the bone, especially in the hip area. Handling these instances is difficult; the gold standard of care is either total hip replacement, depending on the demands of each patient, or hemi-arthroplasty for abnormalities in the femur neck [14] The results of these surgical procedures are usually good in terms of anatomical and functional recovery [16].

Patients must receive a complete evaluation, including blood smears, a complete blood count (CBC) with an emphasis on platelets, and measurements of hemoglobin before conducting such treatments [17]. In addition to thorough postoperative care, necessary transfusions are frequently given to maximize recovery results [18]. In addition, patients receive calcium and vitamin D supplements to strengthen their bones and lower their risk of.

REFERENCES

1. Acurio, M. T., & Friedman, R. J., 1992, Hip arthroplasty in patients with sickle-cell haemoglobinopathy. J Bone Joint Surg Br, 74(3), 367-371. https://doi.org/10.1302/0301-620X.74B3.1587879
2. Hernigou, P., Habibi, A., Bachir, D., & Galacteros, F., 2006, The natural history of asymptomatic osteonecrosis of the femoral head in adults with sickle cell disease. The Journal of bone and joint surgery. American volume, 88(12), 2565-2572. DOI: 10.2106/JBJS.E.01455
3. Hernigou, P., Galacteros, F., Bachir, D., & Goutallier, D., 1991, Deformities of the hip in adults who have sickle-cell disease and had avascular necrosis in childhood. A natural history of fifty-two patients. J Bone Joint Surg Am, 73(1), 81-92. https://journals.lww.com/jbjsjournal/abstract/1991/73010/Deformities_of_the_hip_in_adults_who_have.11.aspx?__hstc=215929672.98fa600b1bb630f9cde2cb5f07430159.1535846400300.1535846400301.1535846400302.1&__hssc=215929672.1.1535846400303&__hsfp=2025384311
4. Jeong, G. K., Ruchelsman, D. E., Jazrawi, L. M., & Jaffe, W. L., 2005, Total hip arthroplasty in sickle cell hemoglobinopathies. The Journal of the American Academy of Orthopaedic Surgeons, 13(3), 208-217. https://journals.lww.com/jaaos/fulltext/2005/05000/Total_Hip_Arthroplasty_in_Sickle_Cell.7.aspx
5. Clarke, H. J., Jinnah, R. H., Brooker, A. F., & Michaelson, J. D., 1989, Total replacement of the hip for avascular necrosis in sickle cell disease. J Bone Joint Surg Br, 71, 465-470. https://scholar.archive.org/work/67m7roggtvepnbgqf445q35h5a/access/wayback/http://pdfs.semanticscholar.org/9d9d/c4b6beb7371654827d4cc094b67914ac6a70.pdf
6. Edington, G. M., & Lehmann, H., 1955, Expression of the sickle-cell gene in Africa. British medical journal, 1(4925), 1308-1311. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2062076/pdf/brmedj03340-0024.pdf
7. Giordano, P., Urbano, F., Lassandro, G., & Faienza, M. F., 2021, Mechanisms of bone impairment in sickle bone disease. International Journal of Environmental Research and Public Health, 18(4), 1832. https://www.mdpi.com/1660-4601/18/4/1832/pdf
8. Ficat, R. P., 1985, Idiopathic bone necrosis of the femoral head. Early diagnosis and treatment. J Bone Joint Surg Br, 67(1), 3-9. https://rlhots.com/wp-content/uploads/2015/09/AVN-Ficat.pdf
9. Powars, D. R., Chan, L. S., Hiti, A., Ramicone, E., & Johnson, C., 2005, Outcome of sickle cell anemia: a 4-decade observational study of 1056 patients. Medicine (Baltimore), 84(6), 363-376. https://journals.lww.com/md-journal/fulltext/2005/11000/Outcome_of_Sickle_Cell_Anemia__A_4_Decade.4.aspx/1000
10. Steinberg, M. E., Hayken, G. D., & Steinberg, D. R., 1995, A quantitative system for staging avascular necrosis. J Bone Joint Surg Br, 77(1), 34-41. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=428055845fca1f f651b8da9abaf5185747dd9801
11. Stuart, M. J., & Nagel, R. L., 2004, Sickle-cell disease. Lancet, 364(9442), 1343-1360. http://www.jvsmedicscorner.com/Medicine_files/Sickle%20cell%20disease%20review.pdf
12. Anand, A. J., & Glatt, A. E., 1994, Salmonella osteomyelitis and arthritis in sickle cell disease. Semin Arthritis Rheum, 24(4), 211-221. https://www.sciencedirect.com/science/article/pii/0049017294900760
13. Ganguly, A., Boswell, W., & Aniq, H., 2011, Musculoskeletal manifestations of sickle cell anaemia: a pictorial review. Anemia, 2011, 794283. https://onlinelibrary.wiley.com/doi/pdf/10.1155/2011/794283
14. Umans, H., Haramati, N. and Flusser, G., 2000, The diagnostic role of gadolinium enhanced MRI in distinguishing between acute medullary bone infarct and osteomyelitis. Magnetic resonance imaging, 18(3), 255-262. https://www.researchgate.net/profile/Hilary-Umans/publication/293827581_The_diagnostic_role_of_gadolinium_enhanced_MRI_in_distinguishing_between_acute_medullary_bone_infarct_and_osteomyelitis/links/56bca19b08ae9ca20a4c7226/The-diagnostic-role-of-gadolinium-enhanced-MRI-in-distinguishing-between-acute-medullary-bone-infarct-and-osteomyelitis.pdf
15. Malizos KN, Siafakas MS, Fotiadis DI, Karachalios TS, Soucacos PN. An MRI-based semiautomated volumetric quantification of hip osteonecrosis. Skeletal Radiol. 2001;30:686-693. doi: https://doi.org/10.1007/s002560100399
16. Calder JD, Hine AL, Pearse MF, Revell PA. The relationship between osteonecrosis of the proximal femur identified by MRI and lesions proven by histological examination. J Bone Joint Surg Br. 2008;90:154-158. https://www.academia.edu/download/69998438/94ebec64a11ed82129737da57d4f1378948f.pdf
17. Doig, K. and Zhang, B., 2017, A methodical approach to interpreting the red blood cell parameters of the complete blood count. American Society for Clinical Laboratory Science, 30(3), 173-185. https://clsjournal.ascls.org/content/ascls/30/3/173.full.pdf
18. Hernigou, P., Housset, V., Pariat, J., Dubory, A. and Lachaniette, C.H.F., 2020, Total hip arthroplasty for sickle cell osteonecrosis: guidelines for perioperative management. EFORT open reviews, 5(10), 641-651. https://eor.bioscientifica.com/downloadpdf/view/journals/eor/5/10/2058-5241.5.190073.pdf
19. Ng, V. Y., Lustenberger, D., Hoang, K., Urchek, R., Beal, M., Calhoun, J. H., & Glassman, A. H., 2013, Preoperative risk stratification and risk reduction for total joint reconstruction: AAOS exhibit selection. JBJS, 95(4), e19. https://scholar.archive.org/work/pdhm2c7we5dorfkretwnpdii6m/access/wayback/http://www .jointsurgery.com.cn/chinese/work/201305310011.pdf
20. Ortel, T. L., 2012, Perioperative management of patients on chronic antithrombotic therapy. Blood, The Journal of the American Society of Hematology, 120(24), 4699-4705. https://www.sciencedirect.com/science/article/pii/S0006497120498659
21. Alexander, D. P., & Frew, N., 2017. Preoperative optimisation of anaemia for primary total hip arthroplasty: a systematic review. Hip International, 27(6), 515-522. https://societaitalianadellanca.eu/cms/wp-content/uploads/2021/ 02/Ancacaffe_2_2018.pdf