

A CASE REPORT ON SYSTEMIC-ONSET JUVENILE IDIOPATHIC ARTHRITIS (SOJIA) WITHOUT MULTIORGAN INVOLVEMENT

PATHAN AMANULLA KHAN, SARAH NOUSHEEN BB*, ASFIYA BEGUM, RAQSHAN JABEEN, YOUSUF HUSSAIN

Department of Pharmacy Practice, Anwarul Uloom College of Pharmacy, Jawaharlal Nehru Technological University, Hyderabad, Telangana, India. Email: sarahnousheen@gmail.com

Received: 01 September 2020, Revised and Accepted: 04 November 2020

ABSTRACT

Systemic-onset juvenile idiopathic arthritis (SoJIA) is a rare form of juvenile idiopathic arthritis (JIA) which manifests as quotidian fevers and arthritis in one or more joints. Features include characteristic salmon pink-colored rash associated with lymphadenopathy, hepatosplenomegaly, and serositis. To the best of our knowledge, this is a rare form of JIA in India and very few cases without multiorgan involvement have been published in literature. The following case reports a 12-year-old male child who presented to the hospital with a history of spiking fevers and arthritis in the knees, ankle, and hip joints. Diagnosis of SoJIA was confirmed after subsequent laboratory investigations; treatment included long-term nonsteroidal anti-inflammatory drugs, and methotrexate. However, due to increased cost of medicines and no guaranteed "cure" for the disease, the present patient switched from allopathic to homeopathic medicines. He still experiences frequent flare-ups associated with the disease, during which aceclofenac is taken for symptom relief. This case also highlights the importance of a "cure" for diseases rather than "symptom-oriented" treatment measures. When a cure is not guaranteed, patients may transition to inexpensive alternate therapies portraying limited efficacy. Further research in the field of rheumatology, specifically for rare diseases, is warranted.

Key words: Systemic-onset juvenile idiopathic arthritis, Multiorgan, Nonsteroidal anti-inflammatory drugs, Methotrexate.

INTRODUCTION

Juvenile idiopathic arthritis (JIA), formerly called juvenile rheumatoid arthritis, is defined as joint disease with an unknown cause that begins before 16 years of age and persists for at least 6 weeks [1]. Systemic-onset arthritis is a rare variant of JIA that manifests with fever lasting up to 2 weeks, joint tenderness, rashes, lymphadenopathy, and organ involvement (pericarditis, pleuritis, and peritonitis) [1,2]. Extra-articular manifestations such as hepatomegaly, splenomegaly, pericarditis, pleuritis, and generalized lymphadenopathy are highly indicative of systemic-onset JIA (SoJIA). Occurrence of hepatomegaly ranges from 33.3% to 60% [2-4], splenomegaly from 40% to 100% [2,4,5], lymphadenopathy from 25% to 100% [2-5], and serositis which may manifest as pericarditis varies from 10% to 40% [2,5]. Our case does not document the presence of either of the above, that is, there is an absence of multiorgan involvement. Furthermore, as this variant of JIA is quite uncommon in India [2,3,6], we report the case of a 12-year-old male child who presented with a week's history of daily spiking fevers and began complaining of joint discomfort in the knee, neck, and hip after having completed a decade of his life.

CASE REPORT

A 12-year-old boy presented with severe pain in the left lower limb which hindered his ability to walk for 1 day. The patient reported no history of trauma to the foot that could explain the onset of pain. The first episode occurred at the age of 10 and recurrence has since been reported. The patient further complained of pain in the knee and hip joints in the past 1 year, with a history of daily spiking fevers for 7 days. His medical history was significant for typhoid fever a few months back, which was treated appropriately. There was no family history of autoimmune diseases including JIA. Immunizations of the patient were all up to date.

Physical examination revealed that the patient was overweight, weighing 45 kg and was 142 cm in height. He was febrile on admission (101°F). On palpation, cervical lymphadenopathy was noted and local tenderness and swelling were detected in the left ankle, knees, and

hip joints. All other vitals were stable. Initially, complete blood picture demonstrated that the patient was anemic (Hb: 11.1 mg/dl) and had features suggestive of inflammation, that is, highly elevated fibrinogen (570 mg/dl), C-reactive protein (CRP) (126 mg/l), and erythrocyte sedimentation rate (ESR) (80 mm/h) values, accompanied with leuko- (13 100 cells/cu mm) and thrombocytosis (437,000 cells/cu mm). There was a decrease in serum calcium levels (8.2 mg/dl). Rheumatoid factor (RF) and anti-nuclear antibodies (ANAs) tested negative in the patient. Magnetic resonance imaging of the left hip and thigh showed near symmetrical marrow signal abnormality in the greater trochanteric apophysis and the intertrochanteric regions of the femora on either side. Short-tau inversion recovery hyperintensity along the sacroiliac joints was noted (Fig. 1). Other parameters such as blood glucose, blood urea, and serum creatinine were found to be normal. Ultrasound detected no evidence of hepatosplenomegaly or associated abnormalities. After excluding all other possible diseases, a diagnosis of SoJIA was made based on physical examination and laboratory findings.

DISCUSSION

Sir George F. Still illustrated in 1897, a form of chronic joint disease in 22 children, 12 of whom presented with systemic manifestations, evidenced from adherent pericardium, pleuritis, splenomegaly, and swollen lymph nodes [7]. The disease, formerly named after him as Still's disease, was recently renamed as systemic arthritis [8]. Systemic arthritis is a variant of JIA which involves pain in one or more joints accompanied with quotidian fevers for a minimum of 72 h and includes one or more of the following: A characteristic salmon colored rash, lymphadenopathy, hepatosplenomegaly, and serositis [1]. It accounts for 8.93-24% of all cases of JIA [2,3,9], with a mean age of onset at 6.3 years (range: 0.7-16 year) [10].

Our patient presented with arthritis in more than 1 joint, the first to be affected being the knees, followed by the neck, ankle, and hip joint. This is consistent with the findings of Sir Still [7] and Behrens *et al.*, [5] in their respective researches. The order of affection of joints (knees, wrists, and ankles) [5,7], however, differed in the present patient. Although the International League of Associations for Rheumatology



Fig. 1: Magnetic resonance imaging of the left hip and thigh

criteria lay emphasis on spiking fevers of at least 2 weeks' duration for diagnosing systemic arthritis, only a week's duration was seen in this patient. Such inconsistency in the patterns of pyrexia was also observed by other researchers [5,8]. Family history was not significant for autoimmune diseases in this case. However, some subtypes of JIA have the susceptibility gene located on certain human leukocyte antigen regions [2,11]. Systemic arthritic rash is characteristically salmon pink colored, erythematous and is mostly seen on the trunk and extremities [8]. Viswanathakumar *et al.*, [2] in their study, demonstrated that only 1 (10%) of the 10 patients with SoJIA presented with rash. Behrens *et al.*, [5] however, reported the occurrence in 81% of patients with the disease. Our case does not report the presence of the characteristic rash. Interleukin 6 (IL-6) is an inflammatory cytokine responsible for the production of RF and is a key mediator of systemic manifestations of the disease in patients [12]. In the current case report, the disease failed to progress to extra-articular organs such as the heart, lungs, and lymph nodes. This may be attributable to decreased IL-6 levels, which resulted in reduced production of RF and ANA and hence diminished systemic progression [12,13].

Laboratory investigations were concordant with an inflammatory reaction. Increased fibrinogen levels, elevated CRP and ESR, leukocytosis, and thrombocytosis implied an ongoing infection. Liver function tests, apart from slight hypoalbuminemia (serum albumin: 3.3 g/dl) which was indicative of inflammation, portrayed no abnormalities. Serum calcium was slightly decreased. The patient was also mildly anemic. Ferritin levels were within normal parameters. These findings, though

not all, coincide with those of others [2,4,5,8]. After thorough exclusion of differentials, a diagnosis of SoJIA was made on the basis of subjective and objective evidences. Treatment was focused on relieving pain and preventing remission. Initially, IV fluids along with high doses of nonsteroidal anti-inflammatory drugs (NSAIDs) were prescribed to the patient. NSAIDs aided in reducing pain and inflammation. Methotrexate was given once a week; this was combined with folic acid to prevent the former drug from exerting its toxic effects. The patient was followed up regularly until improvement in condition was observed. He was then discharged. Discharge medications included NSAIDs and methotrexate injections once a week along with folic acid once daily.

Due to increased cost of medicines and no guaranteed "cure" for the disease, the present patient, instead of opting for corticosteroids or the more potent biologics [8,14], switched from allopathic to homeopathic medicines helpful in treating pain associated with bones [15,16]. However, he has frequent flare-ups associated with the disease, during which he takes aceclofenac for relief of symptoms.

CONCLUSION

Clinicians must be able to recognize such rare entities clinically, by differentiating them from others, so that diseases can be managed effectively, to reduce the recurrence rate and to ensure improvement in patients' quality of life. It is mandatory also, to ensure that adherence to medications is high and to identify factors affecting medication adherence [17]. This case report also highlights the importance of

a “cure” for the disease rather than “symptom-oriented” treatment measures. It is when a cure is not guaranteed, and due to increased cost of therapy, patients tend to transition to alternative therapies that portray limited efficacy. Consequently, the field of rheumatology, specifically rare diseases, warrants further research.

CONSENT

The authors confirm that informed written consent was received from the patient for publication of the manuscript and figures.

COMPETING INTERESTS

The authors declare that they have no competing interests.

ACKNOWLEDGMENT

Not any.

REFERENCES

- Petty RE, Southwood TR, Manners P, Baum J, Glass DN, Goldenberg J, *et al.* International league of associations for rheumatology classification of juvenile idiopathic arthritis: Second revision, Edmonton, 2001. *J Rheumatol* 2004;31:390-2.
- Viswanathakumar HM, Kumar GV. Study of clinical spectrum of juvenile idiopathic arthritis in children in a tertiary referral hospital. *Curr Pediatr Res* 2014;18:21-5.
- Seth V, Kabra SK, Semwal OP, Jain Y. Clinico-immunological profile in juvenile rheumatoid arthritis-an Indian experience. *Indian J Pediatr* 1996;63:293-300.
- Suni KA, Ali A, Lal AA, Kailas L. Clinico-immunological profile of juvenile idiopathic arthritis in children attending SAT hospital, Thiruvananthapuram. *Acad Med J India* 2015;3:99-105.
- Behrens EM, Beukelman T, Gallo L, Spangler J, Rosenkranz M, Arkachaisri T, *et al.* Evaluation of the presentation of systemic onset juvenile rheumatoid arthritis: Data from the Pennsylvania systemic onset juvenile arthritis registry (PASOJAR). *J Rheumatol* 2008;35:343-8.
- Nandi M, Ganguli SK, Mondal R, Ghosh A. Clinico-serological profile of juvenile idiopathic arthritis. *Indian Pediatr* 2009;46:640-1.
- Still GF. On a form of chronic joint disease in children. *Med Chir Trans* 1897;80:47-60.
- Cimaz R, Scheven AV, Hofer M. Systemic-onset juvenile idiopathic arthritis: The changing life of a rare disease. *Swiss Med Wkly* 2012;142:w13582.
- Schneider R, Laxer RM. Systemic onset juvenile rheumatoid arthritis. *Baillieres Clin Rheumatol* 1998;12:245-71.
- Lomater C, Gerloni V, Gattinara M, Mazzotti J, Cimaz R, Fantini F. Systemic onset juvenile idiopathic arthritis: A retrospective study of 80 consecutive patients followed for 10 years. *J Rheumatol* 2000;27:491-6.
- Phelan JD, Thompson SD, Glass DN. Susceptibility to JRA/JIA: Complementing general autoimmune and arthritis traits. *Genes Immun* 2006;7:1-10.
- Cronstein BN. Interleukin-6-a key mediator of systemic and local symptoms in rheumatoid arthritis. *Bull NYU Hosp Jt Dis* 2007;65 Suppl 1:S11-5.
- Cojocaru M, Cojocaru IM, Silosi I, Vrabie CD, Tanasescu R. Extra-articular manifestations in rheumatoid arthritis. *Maedica (Bucur)* 2010;5:286-91.
- Ohlsson V, Baidam E, Foster H, Jandial S, Pain C, Strike H, *et al.* Anakinra treatment for systemic onset juvenile idiopathic arthritis (SOJIA). *Rheumatology (Oxford)* 2008;47:555-6.
- Paul S, Das AP, Bhattacharjee S. Rheumatoid arthritis: Molecular basis and cures from nature. *Int J Pharm Pharm Sci* 2015;7:30-9.
- Gupta MK, Shrivastava AK, Chauhan AP, Gaur DS, Mishra KK, Sharma S. Comparative study of the shiva guggulu and simhanada guggulu in the management of amavata (rheumatoid arthritis). *Int J Appl Pharm* 2016;8:5-12.
- Wee AS, Said MS, Redzuan AB. Medication adherence status among rheumatoid arthritis patients. *Int J Pharm Pharm Sci* 2016;8:317-21.