JURNAL PHARMA BHAKTA

CASE REPORT : JUVENILE IDIOPATHIC ARTHRITIS

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ABSTRACT

Background: Juvenile rheumatoid arthritis, now more commonly known as juvenile idiopathic arthritis (JIA), is a chronic form of arthritis that occurs in children under 16 years of age. It is characterized by persistent inflammation in one or more joints for at least six weeks without an identifiable cause. JIA can lead to pain, swelling, stiffness, and impaired joint function. Polyarthritis, one subtype of JIA, involves five or more joints and often requires long-term therapy. First-line treatment generally includes disease-modifying antirheumatic drugs (DMARDs) such as methotrexate (MTx), although some patients still require additional therapy such as intra-articular corticosteroid injections, including triamcinolone acetonide. **Objective:** To evaluate the clinical condition of a patient with polyarticular JIA who has received methotrexate therapy, and to assess the effectiveness of intra-articular triamcinolone acetonide as an adjunct treatment. **Methods:** This study is based on a case illustration of a 4-year-old boy diagnosed with polyarticular JIA. Data were obtained through medical history, physical examination, methotrexate treatment records, and planned intra-articular injection procedures. A literature review was also conducted to evaluate the effectiveness of triamcinolone acetonide as adjunct therapy in polyarthritis. **Results:** The 4-year-old patient, weighing 18 kg and measuring 109 cm in height, had experienced symptoms for the past two years. Despite methotrexate therapy—gradually increased from 10 mg/m² to 15 mg/m² per week since December 2020—he continued to present with swelling in the hands and feet, stiffness in both knees and elbows, and pain that limited joint extension. Literature indicates that intra-articular triamcinolone acetonide demonstrates approximately 70% effectiveness in managing symptoms in patients with polyarticular JIA. **Conclusions:** JIA is a chronic inflammatory disease that requires comprehensive management. In this case, methotrexate alone did not fully alleviate symptoms, making additional therapy necessary. Intra-articular triamcinolone acetonide is effective and may serve as a viable option to improve joint function and reduce inflammation in polyarticular JIA.

ABSTRAK

Latar Belakang: Juvenile rheumatoid arthritis atau yang kini lebih dikenal sebagai juvenile idiopathic arthritis (JIA) merupakan penyakit arthritis kronis yang terjadi pada anak-anak di bawah usia 16 tahun. Penyakit ini ditandai oleh peradangan persisten pada satu atau lebih sendi selama sedikitnya enam minggu tanpa penyebab lain yang dapat diidentifikasi. JIA dapat menyebabkan nyeri, pembengkakan, kekakuan,

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dan gangguan fungsi sendi. Polyarthritis, salah satu subtipe JIA, melibatkan lima atau lebih sendi dan sering membutuhkan terapi jangka panjang. Pengobatan lini pertama umumnya meliputi disease-modifying antirheumatic drugs (DMARDs) seperti methotrexate (MTx), namun beberapa pasien masih memerlukan terapi tambahan seperti injeksi intraartikular kortikosteroid, termasuk triamcinolone acetonide. **Tujuan:** Mengevaluasi kondisi klinis pasien JIA polyarthritis yang telah menerima terapi methotrexate serta menilai efektivitas injeksi intraartikular triamcinolone acetonide sebagai terapi tambahan. **Metode:** Studi ini disusun berdasarkan ilustrasi kasus seorang anak laki-laki berusia 4 tahun dengan diagnosis JIA polyarthritis. Data diperoleh melalui anamnesis, pemeriksaan fisis, riwayat terapi methotrexate, dan rencana tindakan injeksi intraartikular. Evaluasi literatur dilakukan untuk meninjau efektivitas triamcinolone acetonide sebagai terapi adjuvan pada pasien dengan polyarthritis. **Hasil:** Pasien berusia 4 tahun dengan berat badan 18 kg dan tinggi badan 109 cm telah mengalami keluhan sejak dua tahun sebelumnya. Meskipun telah menerima terapi methotrexate dengan peningkatan dosis dari 10 mg/m² menjadi 15 mg/m² per minggu sejak Desember 2020, pasien masih menunjukkan gejala pembengkakan pada kaki dan tangan, kekakuan pada kedua lutut dan siku, serta nyeri yang menyebabkan kesulitan dalam meluruskan sendi. Berdasarkan literatur, injeksi intraartikular triamcinolone acetonide menunjukkan efektivitas terapi sebesar sekitar 70% pada pasien dengan JIA tipe polyarthritis. **Kesimpulan:** JIA merupakan penyakit peradangan kronis yang memerlukan penanganan menyeluruh. Pada kasus ini, methotrexate belum sepenuhnya mengatasi gejala sehingga diperlukan terapi tambahan. Injeksi intraartikular triamcinolone acetonide terbukti efektif dan dapat menjadi pilihan untuk meningkatkan fungsi sendi serta mengurangi peradangan pada JIA polyarthritis.

INTRODUCTION

Juvenile rheumatoid arthritis or often referred to as juvenile idiopathic arthritis (JIA) is a form of arthritis that attacks children. Arthritis is a disorder that causes joint swelling (inflammation) and joint stiffness. This condition can affect one or more joints in children under 16 years of age (Ringold et al., 2019).

Juvenile Idiopathic Arthritis (JIA) is a chronic inflammatory condition in children. The incidence and prevalence of JIA in European and North American populations range from 2-20 and 16-150 per 100,000.3 Literature data shows the incidence of JIA is 1-22 per 100,000 and the prevalence of JIA is 7-150 per 100,000. JIA is known to be an autoimmune disease. JIA is thought to be due to a complex interaction between non-Mendelian genetics and environmental factors that result in chronic inflammation of the joints and other tissues. In Indonesia, there is no data on JIA morbidity (Al-Mayouf et.al., 2018).

Clinical symptoms of JIA are pain and joint stiffness in the morning for 15 minutes, pain/stiffness of the joints increases every day and with activity, joint stiffness

after prolonged inactivity and joint swelling that causes decreased ROM (range of motion). Pain is often not a primary symptom because some people experience arthritis and synovitis without pain (Shenoi et.al., 2020). Systemic symptoms can precede the development of arthritis with the characteristic of high spiking fever (an increase in body temperature to 390 C or higher, every day or 2 times a day followed by a rapid decrease to basal body temperature or lower). Although this fever pattern is suggestive of JIA, not all individuals experience it. Fever can occur at any time, usually in the afternoon towards evening and in the morning becomes subnormal, accompanied by the appearance of a rash. The rash usually appears and disappears with fever spikes called evanescent as salmon-pink macules (2 mm-10 mm), may be surrounded by a paler halo or central clearing, discrete, and circumscript. Systemic symptoms may also include pericarditis and pericardial effusion, lymph node enlargement and/or splenomegaly. Chronic anterior nongranulomatous uveitis (iridocyclitis) is also common; uveitis occurs suddenly and is often asymptomatic, some people experience symptoms of pain, redness, headache, photophobia, visual changes as the disease progresses (Shenoi et.al., 2020).

CASE PRESENTATION

A 4-year-old boy weighing 18 kg and 109 cm tall, referred from Hospital Y, came to the allergy polyclinic of Hospital X with complaints of pain in the right and left knee joints and both wrist joints. The patient was diagnosed with Juvenile Idiopathic Arthritis (JIA) / Polyarthritis.

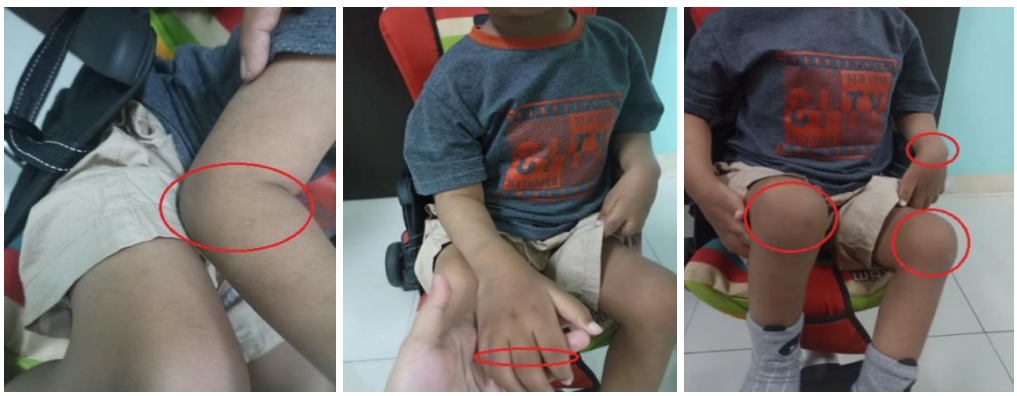

Figure 1. Condition of patient An. MR at the Allergy Polyclinic at Hospital X

The patient began to feel the complaint 2 years ago with a diagnosis of JIA and has received MTx therapy since December 2020 with a dose of 10 mg/m2 per week then the dose was increased to 15 mg/m2 per week. The patient came to Hospital X for intra-articular injection, currently there are still complaints of swelling in both feet and both hands. Both knees and elbows are stiff, painful and difficult to straighten.

DISCUSSION

Referred patients from Hospital Y came from the allergy polyclinic of Hospital X, a 4-year-old patient with complaints of pain in the right and left knee joints, and both wrist joints. Currently there is no fever, the swelling in the knees has decreased. The patient began to feel the complaints 2 years ago with a diagnosis of JIA and has received MTx therapy since December 2020 with a dose of 10 mg/m2 per week then the dose was increased to 15 mg/m2 per week. The patient came to Hospital X for intra-articular injection, currently there are still complaints of swelling in both legs and both hands. Both knees and elbows are stiff, painful and difficult to straighten.

JIA management uses the 2011 ACR Recommendations revised in 2013; grouped based on the number of joints affected, prognosis, and level of JIA disease activity. ACR defines 6 variables to monitor the response to therapy, namely: global examination by a physician using a 10-point visual analog scale (VAS), examination of disease conditions by patients/parents (similar to a 10-point VAS but completed by patients/parents), functional assessment, number of active joints, number of joints experiencing ROM limitations, and signs of acute phase reactants such as ESR and CRP examinations. The goal of therapy is to reduce pain and disability, minimize side effects, prevent disease progression and achieve clinical remission (Beukelman et.al., 2011). In this patient, the JADAS score: VAS examination assessment: 2, VAS patient assessment: 2 and number of joints: 8.

Patients were fasted for preparation of intraarticular injection with sedation for intraarticular injection, patients also received MTX therapy: 10 mg/week PO, ibuprofen 3x 5 mL BSA: 0.66, folic acid 5 mg/week, ferrous sulfate 1x100 mg and vitamin D: 1x1000 IU.

DMARD (*Disease Modifying Anti Rheumatic Drugs*) Are agents that can slow down the radiological progression of the disease, MTX is recommended as first-line treatment in polyarthritis, and in systemic arthritis with dominant joint inflammation. Methotrexate is the most commonly given folate antagonist in children with aggressive arthritis, given once a week (*oral or subcutaneous*), the effects can be seen in 6-12 weeks. Side effects can include gastrointestinal complaints and liver dysfunction (increased liver enzymes). The dose of methotrexate is 15-30 mg per day, for 5 days. The dose is given again after a minimum break of 1 week. Repeat doses can be done 3-5 times (Shenoi et.al., 2020).

Patients will undergo intra-articular injection, where intra-articular corticosteroids can be given in oligoarthritis that does not respond to NSAIDs or as supportive therapy for joints that are already inflamed and contracted. Intra-articular corticosteroids can also be given in polyarthritis if one or more joints do not respond to NSAIDs. Triamcinolone hexacetonide is an option with a dose of 20-40 mg for large joints. Triamcinolone hexacetonide is often used and has a rapid inflammatory resolution effect, can last a long time, and can replace the need for oral therapy.

Triamcinolone hexacetonide preparations: 2-6 mg (small joints), 5-10 mg (medium joints), 10-20 mg (large joints). Given to 1 joint every 3-4 weeks as needed.

Ibuprofen is a moderate anti-inflammatory and has good tolerance at a dose of 35 mg/kgBW/day, divided into 3-4 doses and given with food. Management of chronic pain in children is not easy. The problem is very complex, because in general children cannot express pain. Non-steroidal anti-inflammatory drugs (NSAIDs) are general anti-pain drugs that are well tolerated by children. In addition to reducing pain, NSAIDs can also be used to control joint stiffness. The analgesic effect is also very fast (Akib et.al., 2008).

Juvenile arthritis is an autoimmune disease, Vitamin D plays an important role in regulating inflammation, such as in the pathogenesis of Juvenile Idiopathic Arthritis (JIA). As an immune and inflammatory mediator, vitamin D is involved in the pathogenesis of autoimmune diseases, for example, multiple sclerosis, type 1 diabetes, rheumatoid arthritis, Crohn's disease, and chronic juvenile hood arthritis. The results of Wulandari et.al., (2020) research show that vitamin D supplementation may have a potential role in the treatment of JIA.

Cells involved in the innate and adaptive immune responses such as macrophages, dendritic cells, T cells, and B cells express enzymes required to activate and respond to vitamin D. Cytochrome p450 27B1 (CYP27B1) is the enzyme required to synthesize 1,25-dihydroxyvitamin D (1,25(OH)2D), the active form of vitamin D, from circulating 25-hydroxyvitamin D (25(OH)D). The action of 1,25(OH)2D is mediated by its binding to the vitamin D receptor (VDR), a nuclear transcription factor. The VDR then binds to the Vitamin D Response Element (VDRE), a genetic sequence located in the promoter region of genes regulated by vitamin D. Vitamin D tends to suppress the immune response. Consequently, low vitamin D concentrations are associated with increased pro-inflammatory mediators and more active disease consistent, for example, with the observation that low serum 25(OH)D is associated with increased disease activity in rheumatoid arthritis. Therapeutic management aims to assess serum vitamin D levels and their relationship with C-Reactive Protein (CRP) and disease activity in JIA patients (Marini et.al., 2020).

CONCLUSION

Juvenile idiopathic arthritis (JIA) is a form of arthritis that affects children. Arthritis is a disorder that causes joint swelling (inflammation) and joint stiffness. At least 1 joint for approximately 6 months without other causes. Diagnosis can be made through anamnesis, physical examination, classification, and supporting examinations. Based on the literature obtained, the action of intraarticular triamcinolone acetonide injection in JIA polyarthritis patients showed an effectiveness of 70%.

SUGGESTION

We would like to thank the Pharma Bhakta Journal Team for their attention and cooperation. Hopefully our article will be useful for the development of Clinical Pharmacy knowledge at the Bhakti Wiyata Health Sciences Institute in particular and the wider community in general.

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