Reumatismo, 2012; 64 (3): 175-179

Elbow monoarthritis: an atypical onset of juvenile idiopathic arthritis

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SUMMARY

Juvenile idiopathic arthritis (JIA) is the most common chronic rheumatic condition in childhood and an important cause of short and long term disability. Oligoarthritis is defined as an arthritis that affects four o fewer joints during the first 6 months of disease. The large majority of patients within this category belongs to a quite well defined disease which is not observed in adults. It is characterized by an early onset (before 6 years of age), an asymmetric arthritis involving mainly large joints, a female predilection, a high frequency of positive antinuclear antibodies (ANA), a high risk for developing chronic iridocyclitis and consistent HLA associations. We describe 3 clinical cases who presented monoarthritis of the elbow as early sign of oligoarticular JIA. All patients showed inflammatory markers elevation and 2/3 were ANA positive. MRI showed the presence of synovial inflammation without bone involvement. Intraarticular triamcinolone hexacetonide, led to remission in one case, while in the other two there was a re-activation of the disease treated with NSAIDs and/or MTX. The reported cases represent 0.6% of 490 patients with JIA followed by our unit in the last 10 years. Cases of exclusive involvement of the elbow at onset of JIA in literature are rare. Therefore, we report 3 cases of monoarthritis of the elbow as initial sign of oligoarticular JIA, a very atypical onset of this disease.

Key words: *Elbow arthritis, juvenile idiopathic arthritis, monoarthritis.*

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INTRODUCTION

Juvenile idiopathic arthritis (JIA) is the most common chronic rheumatic condition in childhood and it is an important cause of short- and long-term disability. JIA is not a single pathological entity, but a term which regroups all arthritis starting before 16 years, lasting for more than 6 weeks and have unknown etiology. So JIA is an exclusion diagnosis.

A possible etiopathogenetic hypothesis is the exposure to ubiquitous environmental agents, even though none has been consistently identified in subjects genetically predisposed (1). The most recent classification has been proposed by International League of Associations for Rheumatology (ILAR) and recognizes 7 major categories (2). Among these, the most frequent is oligoarticular JIA, indeed is estimated that from 50% to 80% of all caucasian children affected by JIA in Europe and north America belong to this category with prevalence and incidence respectively varying from 16 to 150 and from 2 to 20 out of 100,000 children. Oligoarticular JIA is characterized by early onset, usually before 6 years, female predominancy and frequent positivity for anti-nuclear antibodies (ANA) and is associated with a high risk of developing chronic iridocyclitis. Clinically it affects primarily lower limbs, mainly knees and ankles. Monoarticular involvement at the onset is frequently observed, usually as a monoarthritis of the knee (3-6). A study performed on a population of ANA-positive patients showed that 3/4 of the subjects were presenting at the onset a monoarthritis, usually at the knee, while the involvement of the elbow could be observed only during the following phases of the disease and only in association (7). We describe 3 clinical cases of children followed by our unit of Pediatric Reumatology in Meyer Children's Hospital in Florence, presenting monarthritis of the elbow as single initial manifestation of oligoarticular JIA. This site of presentation is strongly atypical at the onset of this disease.

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CASE REPORTS

Case 1

C.A. is a 3-year-old female, referred to our Hospital for sudden onset of swelling, pain and functional limitation of the left elbow. Clinical examination was normal, except for arthritis of the left elbow. Blood tests showed inflammatory markers increased (CRP 4.11 mg/dl, nv: <0.50 mg/dl; ESR 87 mm/h, nv 2-31 mm/h), mild anemia (Hb 10.7 g/dl, nv 12-14 g/dl) and ANA positivity (1:640 titer, subsequently confirmed). Purified protein derivative (Mantoux) skin test and Quantiferon-TB tests were negative. Radiography of the left elbow was normal, while ultrasonography showed joint effusion, swelling of the periarticular soft tissues and significantly increased blood flow on the affected site. To complete diagnostic procedures, an MRI with contrast was performed revealing an extended area of swelling of the left elbow, synovial hyperplasia and extended synovial pannus, as in inflammatory arthritis. For the atypical onset manifestations an oncologic-orthopaedic clinical evaluation was performed and suggested needle synovial biopsy. This showed a diffuse inflammatory infiltrate, without atypical proliferation and/or microorganisms. Thus malignancy and infections were excluded, so oligoarticular JIA was diagnosed. Intraarticular steroid administration with triamcinolone hexacetonide was performed, followed by good clinical response. Uveitis has never been detected during the follow-up. Two months after arthrocentesis a flare on the left elbow occurred, associated with left wrist arthritis. So, treatment with methotrexate (MTX, dose: 15 mg/mq/week) was started.

Case 2

C.Y. is a young girl of 15 years of age, referred to our Unit for pain on the left elbow, without improvement after 5 months of NSAIDs therapy, prescribed by other physician. At admission, clinical examination showed swelling and flexion contracture of the left elbow. Blood tests showed increase of inflammatory markers (ESR 43 mm/h, CRP 0.76 mg/dl). HLA-B27 and ANA titer were negative. Ultrasonography showed the presence of an hypoechogenic film under the tricipital tendon, while MRI with contrast showed a large joint effusion with synovial thickening (Figure 1). To complete diagnostic procedures a total body bone scintigraphy was performed, and it confirmed increased activity on the left elbow. Malignancy and infections were excluded, so a diagnosis of oligoarticular JIA was made. Intraarticular steroid administration with triamcinolone hexaceto-

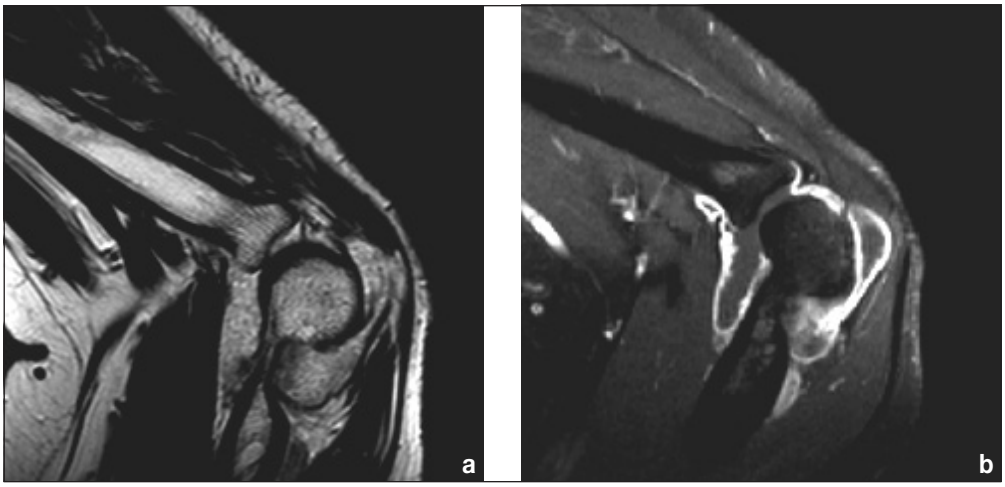

Figure 1 - Two MRI images of the elbow before (1a) and after (1b) contrast: articular capsule appears stretched by serous fluid effusion with thickening of synovial linings (1a). In figure 1b contrast enhancement is showed.

nide was performed, followed by rapid resolution of symptoms and signs of joint inflammation. Four months later, left elbow arthritis recurred, and a trial with NSAID was made with good response. At the last examination, after 2 years of follow-up, the girl was healthy without therapy and articular examination was normal. No ocular manifestations were described during follow-up.

Case 3

C.A., 6 year-old female, complained of pain at left elbow and morning stiffness. Two months later she was referred to our Unit. General physical examination was normal, except for swelling and functional limitation on the left elbow. Blood test showed increase of ESR 40 mm/h, while CRP and Hb were normal, ANA was positive (1:640). Ultrasonography of the left elbow showed articular effusion with synovial thickening; MRI with contrast showed articular effusion, synovial thickening with contrast enhancement, due to synovial pannus. Malignancy and infections were excluded, so a diagnosis of oligoarticular JIA was made. Intraarticular steroid administration with triamcinolone hexacetonide was performed, followed by rapid resolution of symptoms and signs of joint inflammation. Slit lamp examinations were negative. After 2 years of follow-up, the child is in complete clinical remission without therapy.

DISCUSSION

Arthritis of the elbow is rare, and usually follows a trauma. Before diagnosing an atypical onset of juvenile idiopathic arthritis it is necessary to exclude all other possible causes, in particular orthopaedic (8, 9) or infectious disorders. Etiological agents more frequently involved in septic and reactive arthritis are *Staphyloccocus aureus*, *Streptococcus pneumoniae*, *group A Streptococcus beta haemolyticus*, *Borrelia burdgoferi* for Lyme disease, and enteric and genital bacterial infections *(Chlamydia trachomatis, Yersinia enterocolica, Salmonella, Shigella, Campylobacter)*. Viral arthritis is rare in pediatric age, more frequent in adults (10).

Other possible causes of non-infectivous arthritis in childhood are hemarthrosis, in haemophilia (11), malignancy such as acute lymphoblastic leukemia (12), neuroblastoma, osteoid osteoma (13), synovial chondrosarcoma (14) and aponeurotic fibroma (15). Gaucher disease and sickle cell anemia can cause articular pain crisis. Rare causes of elbow chronic monoarthritis, such as tubercolosis, mostly in those countries in which the disease is endemic (16), Blau syndrome (17) and villonodular synovitis should also be considered (18). Recurrent involvement has been described in occult celiac disease or other autoinflammatory diseases (19) (Tab. I).

Table I - Conditions that more frequently mimic juvenile idiopathic arthritis.

1. Trauma	**6. Malignant and hematological disease** Sickle cell anemia Hemophilia Neoplasia (leukemia, lymphoma, neuroblastoma)
2. Infections Osteomyelitis Septic arthritis Viral arthritis	
3. Post infectious arthritis Reactive arthritis Acute rheumatic fever Lyme disease Reiter's syndrome	**7. Miscellaneous** Foreing body synovitis Benign hypermobility syndrome Osgood-Schlatter syndrome Growing pains Transient synovitis of the hip Non-organic musculoskeletal pain
4. Inflammatory bowel disease	
5. Allergic-immunologic arthritis Hypersensitivity vasculitis Henoch-Schonlein purpura Erythema nodosum	**8. Connective tissue disease** Systemic lupus erythematosus Juvenile dermatomyositis Scleroderma Vasculitis (e.g. Kawasaki disease, polyarteritis nodosa)

Personal history, including trauma, sport injuries, travels, tick bites, infections, and accurate clinical examination, including articular and extra-articular signs, are mandatory for a correct diagnosis. Synovial fluid analysis can be useful to identify the presence of blood, as in haemophilia or villonodular synovitis, or bacteria and elevated number of neutrophils as in septic arthritis.

Blood tests are helpful to discriminate between infections or inflammatory, acute or chronic disorders (eg CBC, coagulation tests, inflammatory markers, HLA-B27, ANA, serologic investigations, Quantiferon-TB test). All our patients showed an increase of the inflammatory markers (medium ESR 44 mm/h; medium CRP 2.55 mg/dl) and 2/3 were ANA positive.

First level imaging, such as radiography and ultrasonography, is useful to assess the possible presence of effusion and/or synovitis in the joints, but MRI with contrast is better to evaluate the inflammation or thickening of the synovia, the presence of articular effusion and subchondral erosions, with earlier and higher sensitivity than routine imaging (20). In particular, MRI performed in our cases showed the presence of synovial inflammation without bone involvement. This is helpful in our diagnosis considering that infectious forms often have bone involvement in pediatric age.

Because of the presence of persistence elbow arthritis, a diagnosis of oligoarticular JIA was made, and intraarticular steroid administration was performed as the first line treatment. In all patients we used triamcinolone hexacetonide, which led to persistent remission in one case while in the other two there was a subsequent flare of the disease. One case had a relapse on the same elbow four months later, so she was treated with NSAIDs and is now in complete clinical remission. In another patient, 2 months later, the disease involved also the left wrist, so a treatment with MTX (dose 15 mg/m²/week) was started (21).

The present case series represent 0.6% of 490 patients with JIA diagnosis followed by our unit in the last 10 years. Clinical experience leads to think that usually a monoarthritis of the elbow can be more suggestive for septic arthritis than for an orthopaedic or haematologic disease; to the best of our knowledge, there are no reports in the literature about elbow arthritis as onset of oligoarticular JIA. In conclusion, we report 3 cases of monoarthritis of the elbow as initial sign of oligoarticular JIA, a very atypical onset of this disease.

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