review

Oligoarticular juvenile idiopathic arthritis among Saudi children

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BACKGROUND AND OBJECTIVES: Oligoarticular juvenile idiopathic arthritis (JIA) is the most frequent chronic inflammatory rheumatic condition in children. We aimed to describe the clinical and serological profile of Saudi patients with oligoarticular JIA.

DESIGN AND SETTINGS: Hospital-based retrospective chart review of all children diagnosed with oligoarticular JIA and followed up at King Abdulaziz University Hospital between 1998 and 2012.

PATIENTS AND METHODS: We reviewed the medical files of children with oligoarticular JIA and recorded the gender, age at presentation and diagnosis, clinical presentation, laboratory and radiological investigations, treatment administered, and disease complications. Descriptive statistics was performed using SPSS (version 20, SPSS Inc., Chicago, IL, USA).

RESULTS: We enrolled 37 patients with JIA, of which 24 (64.9%) were girls. The mean age of the patients at presentation was 6.9 years, while the mean age at diagnosis was 7.2 years. A total of 31 patients (83.8%) presented with joint pain, and 36 (97.3%) had a swelling; 19 patients (51.4%) had a high erythrocyte sedimentation rate (ESR) at first presentation (mean, 41.8 [25.4] mm/h). ANA was positive in 15 patients (40.5%). The following treatments were administered: naproxen in 37 patients (100%), intra-articular corticosteroids in 12 cases (32.4%), methotrexate in 14 patients (37.8%), and adalimumab in 5 patients (13.5%). During follow-up, the following were documented: limited range of motion (n=15; 40.5%), deformity (n=5.4%), contracture (n=1; 2.7%), leg-length discrepancy (n=9; 24.3%), and anemia (n=7; 18.9%).

CONCLUSION: Oligoarticular JIA is more frequent in females, and it shows a predilection for the knees. Initially, many patients presented with high ESRs, and they were antinuclear antibody positive. Early diagnosis and aggressive treatment resulted in a low rate of arthritis and extra-articular manifestations in our cohort.

Oligoarticular juvenile idiopathic arthritis (JIA) is the most frequent chronic inflammatory rheumatic condition in children.[1] The diagnosis of oligoarticular onset JIA is based upon the presence of arthritis in 4 or fewer joints during the first 6 months of disease. If a single joint is involved, arthritis must be present for at least 3 months and multiple alternative causes of arthritis must be excluded.[1]

Some cases of typical oligoarticular disease evolve into chronic destructive arthritis. This is an unusual course of events that should prompt the physician to perform a careful evaluation to exclude other etiologies, such as tuberculosis. Progression to a polyarticular disease is particularly uncommon if children with significant anemia or elevation of the erythrocyte sedimentation rate (ESR) are excluded. When it does occur, the disease is termed extended pauciarthritis in the new nomenclature. Children who develop extended arthritis are likely to have persistent disease lasting into adulthood.[2]

Uveitis is reported in 30% of antinuclear antibody (ANA)-positive patients with JIA. It is often initially silent, and by the time the child complains of eye pain or poor sight, it is likely that permanent and irreversible damage has already occurred.[3] Other complications, such as leg-length (LL) discrepancy, which is caused by a localized overgrowth at the knee, have also been reported in patients with JIA.[4]

Most data on JIA come from studies conducted in Europe and North America,[1-3] and very little is known about the disease in Japan, India, and Australia, which have been reported to have a lower incidence of oligoarticular disease, ANA positivity, and eye involvement.[5-8] Similar findings have also been reported in African Americans living in the United States.[9]

In the published reportspublished reports, there is a paucity of studies considering oligoarticular JIA in a Saudi population. Thus, we conducted this study to describe the clinical and serological profile of Saudi patients with oligoarticular JIA at a tertiary hospital in Jeddah, Saudi Arabia.

METHODS

Patients and Methods

We retrospectively reviewed the medical records of patients who were followed up for JIA at King Abdulaziz University Hospital, between 1998 and 2012. Accordingly, we excluded all cases of systemic onset JIA, rheumatoid-factor-positive polyarticular and rheumatoid-factor-negative polyarticular JIA, psoriatic JIA, enthesitis-related arthritis, septic arthritis, tuberculous arthritis, reactive arthritis, and arthritis due to trauma.

The diagnosis of oligoarticular JIA was based on the criteria of the International League Against Rheumatism,10 which categorized the disease into persistent (≤4 joints affected during the first 6 months of disease) and extended (initially ≤4 joints affected and then subsequently involving >4 joints after 6 months).

For all patients included in the study, we collected the following data: gender, age at presentation, age at diagnosis, arthritis distribution, laboratory investigations (ESR and ANA), radiological investigations (x-ray, magnetic resonance imaging [MRI]), and treatment regimens (nonsteroidal anti-inflammatory drugs, corticosteroids, and disease-modifying antirheumatic drugs [DMARDs]).

The study was approved by the Biomedical Ethics Committee of King Abdulaziz University.

Statistical analysis

Data were analyzed using the SPSS (version 20, SPSS Inc., Chicago, IL, USA). Descriptive statistics were calculated for all variables, and results were expressed as frequencies, percentages, means, and standard deviations.

RESULTS

We enrolled 37 patients with oligoarticular JIA, of which 24 (64.9%) were females (female-to-male ratio=1.8:1). The mean age of the patients was 10.9 years. The mean age of the patients at presentation was 6.9 years, while the mean age at diagnosis was 7.2 years.

All the patients had persistent oligoarticular JIA. A total of 31 patients (83.8%) presented with joint pain, while 36 (97.3%) had a swelling. As shown in **Table 1**, the most frequently affected joint was the knee; the right knee was affected in 26 patients (70.3%), while the left was affected in 20 cases (54.1%). Two patients (5.4%) presented with uveitis, while only 1 patient subsequently developed uveitis.

There was no history of preceding trauma among the patients. A history of preceding upper respiratory tract infection was documented in 2 patients (5.4%), while fever was recorded in 3 cases (8.1%).

An ESR was performed in 26 of the 37 patients. The ESR values ranged from 8 to 96 mm/h (reference range, 0-20 mm/h). A total of 19 patients (51.4%) had a high ESR at first presentation (mean, 41.8 [25.4] mm/h); the results were normal in 7 patients (18.9%). ANA was positive in 15 patients (40.5%).

X-rays of the affected joints were performed in 11 children (29.7%), while MRI of the affected joints was valid for 9 patients (24.3%). **Table 2** shows the MRI findings of the patients.

Regarding treatment, the following medications were administered: naproxen in 37 patients (100%), intra-articular corticosteroids in 12 cases (32.4%), methotrexate in 14 patients (37.8%), and adalimumab in 5 patients (13.5%). There was no case of etanercept administration in any of the patients. Systemic steroids had been used in 15 children (40.5%) prior to their referral to our centers. Steroid eye drops were used in 2 patients (5.4%) who had uveitis.

The duration of follow-up ranged from 5 to 7 years, during which the following were documented: limited range of motion in 15 patients (40.5%), deformity in 2 children (5.4%), contracture in 1 patient (2.7%), LL discrepancy in 9 patients (24.3%), and anemia in 7 patients (18.9%). Three patients (8.1%) had chronic uveitis during follow-up, and ANA was positive in 1 of the 3 patients. However, the uveitis resolved after treatment in 2 patients; it was complicated by cataract in 1 case.

DISCUSSION

No current data are available on oligoarticular JIA in Saudi children. The most recent study, conducted in 2006, on a group of Saudi patients with JIA compared the clinical and laboratory variables in familial and sporadic systemic-onset JIA.[11] In the current study, we described the clinical and serological characteristics of a population of Saudi patients with oligoarticular JIA.

Table 1. Distribution of affected joints in the study population.

Joint affected	Frequency	Percentage
Right knee	26	70.3
Left knee	20	54.1
Right ankle	5	13.5
Left ankle	4	10.8
Right wrist	0	0.0
Left wrist	3	8.3
Right elbow	2	5.4
Left elbow	2	5.4
Both shoulders	1	2.7

Table 2. Magnetic resonance imaging findings of 9 patients in the study population.

	Frequency	Percentage
Right knee joint effusion	4	10.8
Right knee joint inflammation	1	2.7
Left knee joint effusion	2	5.4
Left knee joint effusion and synovitis	1	2.7
Left knee tenosynovitis	1	2.7

Our results demonstrated that the mean age of the patients at diagnosis was 7.2 years, which falls within the reported range of 4.1 to 8.9 years in the published reports.[12-16] Findings from a large hospital-based study in Toronto showed that the mean age of patients with persistent and extended oligoarticular JIA was 5.1 and 3.8 years, respectively.[13] Unfortunately, our small sample size does not permit us to make relevant comparisons with the study from Toronto.

Consistent with previous findings, we observed that females were more affected than males.[12,17,18] On the contrary, results from 1 study showed that the female-to-male ratio in the patients of Arab origin was 2:3.[14] Nevertheless, the authors observed a female-to-male ratio of 7:3 and 3:2 in patients of European and non-European origin (North and South American, African, Arab, and Asian), respectively.

A total of 31 patients (83.8%) in our study presented with joint pain, while 36 (97.3%) had a swelling. The knee was the most commonly affected joint, followed by the ankle and the wrist. A similar pattern of joint involvement was reported in a series of patients with oligoarticular JIA in India.[19] However, there are no reports as to whether there is a predilection for the right or left joint.

Recently, it was reported that a polyarticular course could be suspected in patients with oligoarticular-onset JIA who initially had more than 1 joint involved, at least 1 upper limb involved, or a high ESR. Importantly, initial ESR values >100 mm/h in the first hour increased the risk of joint destruction in oligoarticular JIA (hazard ratio=6).[20] Although nearly half of our patients (n=19; 51.4%) had a high ESR, none had values >100 mm/h, and we did not record any findings of joint destruction on plain radiographs; however, x-rays may have underestimated joint damage compared with results using MRI.[21,22] MRI was performed only in 9 patients, of whom 7 demonstrated effusion of the knee joint. We requested the examination in patients only with monoarthritis to confirm synovitis and to rule out other diagnoses, as it is not feasible to request MRI for multiple joint assessments of children in the clinical setting. However, it was previously reported that MRI images revealed the involvement of clinically unaffected knees in children with monoarthritis, which was shown to predict disease extension.[23]

In this study, uveitis was diagnosed in 3 patients (8.1%). According to 1 report from Germany, uveitis affects 12% of children with JIA, including 25% with extended oligoarticular JIA and 16% with persistent disease.[24] Similar findings were reported by Saurenmann et al[13] who found that uveitis was more common in patients with extended oligoarticular JIA. Furthermore, some studies demonstrated that more females develop uveitis than males;[14,24,25] however, it is not clear whether this is because of the female preponderance in oligoarticular JIA or an increase in the rate of ANA positivity in females. Unfortunately, we did not explore gender distribution nor the rate of ANA positivity in these cases because only 3 patients in our study had uveitis and only 1 of them was ANA positive.

The treatment of oligoarticular JIA in our cohort varied from anti-inflammatory therapy to treatment with immunosuppressive agents. Overall, 15 patients (40.5%) had limited ROM, 9 (24.3%) had LL discrepancy, and 2 (5.4%) had deformity. Only 3 patients (8.1%) developed chronic uveitis. Although our patients were followed up for a considerable length of time (5-7 years), the rate of joint and eye complications was very low contrary to that reported by other authors.[20,26] In 1 study of a homogenous population of patients with oligoarticular JIA, who were followed up for an average of 4.2 (2.5) years, the authors reported 50% extension, 35% erosion, and 30% uveitis,[20] which is much higher than the complication rate observed in our study. However, the low rate of joint complications in our study could be because we had no case of extended oligoarticular JIA compared with

the study by Guillaume et al,[20] which included a high number of cases with extended oligoarticular disease. Findings from another study that included patients with persistent (89.3%) and extended (10.7%) oligoarticular JIA demonstrated that female gender, DMARD use, and knee involvement were associated with joint damage, whereas only a joint steroid injection was associated with extra-articular damage.[27]

Besides its retrospective nature, 1 limitation of our study is the relatively small sample size. Despite these limitations, this study is the first to describe the clinical and serological characteristics of a group of Saudi patients with oligoarticular JIA. However, we recommend conducting a multicenter study with a larger sample size to assess the risk factors and the genetic implications in oligoarticular JIA.

CONCLUSION

Oligoarticular JIA was more frequent in females, and it showed a predilection for the knees. Nearly half of our patients had high ESR values, and MRI investigations showed joint effusion in a very small proportion of the study population. Treatment, ranging from anti-inflammatory therapy to immunosuppressive agents and a follow-up of at least 5 years resulted in a low rate of articular and extra-articular complications.

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