



ORIGINAL ARTICLE

Different types of juvenile idiopathic arthritis in children presenting in a tertiary care hospital.

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ABSTRACT... Objective: To determine the frequency of different types of juvenile idiopathic arthritis (JIA) in children presenting in a tertiary care hospital. **Study Design:** Cross-sectional study. **Setting:** Department of Pediatrics, Children Hospital Complex & Institute of Child Health Multan. **Period:** January 2021 to July 2021. **Material & Methods:** Children of both genders with diagnosis of JIA aged 6-12 years and having duration of illness more than six weeks. Age, gender and duration of JIA were noted. Stratification of confounder variables e.g., age, gender and duration of JIA was done. Post-stratification Chi-square test was applied to determine the effect of the variables on frequency of different forms of arthritis. P-value <0.05 was taken as significant. **Results:** In a total of 121 children, mean age was 8.84 ± 1.83 years. 72 (59.5%) were boys. Mean duration of symptoms was 7.93 ± 4.61 months. Oligoarticular JIA was most common type diagnosed in 40 (33.1%) children followed by polyarticular JIA in 37 (30.6%). Oligoarticular and polyarticular JIA were significantly more common in boys (67.5% and 67.6%) compared to girls (32.5% and 32.4%) respectively ($p < 0.001$). **Conclusion:** Oligoarticular JIA subtype is the most common subtype of JIA. Identification of these different subtypes is beneficial for diagnosis and long-term treatment of such children.

Key words: Arthritis, Juvenile, Oligoarticular, Polyarticular.

INTRODUCTION

Globally, “Juvenile Idiopathic Arthritis (JIA)” is the commonest type of chronic arthritis seen in pediatric age groups. The JIA is known to be a heterogeneous inflammatory disease and described as “arthritis lasting for 6 weeks or longer with onset before 16 years of age with no known reason”.¹ Significant degree of morbidity and disability is associated with JIA which negatively influence the quality of life and routine activities.² Variation is observed in terms of prevalence of JIA is different parts of the world and races.³ The estimated incidence of JIA is calculated to be between 2 to 20/100,000 population while it is calculated to be between 7 to 400 per 100,000 in the pediatric age groups.^{4,5}

Limitations exist in understanding of the pathophysiological basis of childhood arthritis. The JIA classification depends largely on clinical features,

family history, and in some patients, information from some laboratory tests (rheumatoid factor, anti-nuclear antibodies, HLA-B27). JIA has been defined in six various types, depending on specific inclusion and exclusion criteria. It is estimated that around 20% of pediatric cases of chronic arthritis do not satisfy any classification so they are considered as the undifferentiated arthritis.^{6,7} There is a huge difference in the prevalence of different forms of JIA. A study conducted in Saudi Arabia found “Systemic onset JIA (SoJIA)” as the most prevalent form found in 36.5% children while polyarticular arthritis was observed in 29% and oligoarticular arthritis in 28% children.⁸ Another research found polyarticular arthritis as the commonest form in 46.1% patients, followed by oligoarticular in 32% patients, SoJIA in 14.2%, Enthesitis related arthritis in 6.4% and Psoriatic arthritis in 1.3% patients.⁹ In another study conducted in Turkey by Sen et al. found

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polyarticular type as the commonest found in 42.3% patients, followed by oligoarticular in 37.1%, SoJIA in 9%, enthesitis-related arthritis (ERA) 10% and psoriatic arthritis 1%.¹⁰

Studies conducted in different regions of world have found different prevalence of different forms of JIA this may be due to different demographic profile of the studied patients. So far, only 2 local studies are on record and both of those were with relatively small sample size evaluating forms of JIA.^{11,12} And these studies cannot represent the whole population. The purpose of the present study was to determine the frequency of different forms of JIA in children presenting in a tertiary care hospital of Pakistan. The results of this study will help to understand the pattern of illness in our local population (as no previous study has been conducted in this region to our best knowledge). Determination of pattern of different forms of JIA will also help in deciding and designing better treatment options in these patients.

MATERIAL & METHODS

This cross-sectional study was done at “The Department of Pediatrics, Children Hospital Complex & Institute of Child Health Multan” from January 2021 to July 2021. The sample size was calculated by taking expected frequency of SoJIA in 8.6%¹⁰ patients and by taking desired precision level of 5.0% and confidence interval 95% the calculated sample size is 121 patients. Inclusion criteria were children of both genders with diagnosis of JIA aged 6-12 years and having duration of illness more than six weeks. Exclusion criteria were patients with diagnosis of brucellosis, (diagnosed on previous history or presence of brucella bacteria in blood stream on hematology findings), tuberculosis (diagnosed on previous history or positive AFB test) or any other infection (diagnosed on history and medical records) like post-streptococcal arthritis, rheumatic fever, septic arthritis / osteomyelitis or diagnosed by infection studies including cultures and serology. Diagnosis of JIA and its different forms was made by consultant rheumatologist having a minimum of 3 years post-fellowship experience on the basis of criteria defined by “International League of Association for Rheumatology” classification

for JIA and depended on existence of chronic arthritis (diagnosed on previous medical records) persisting for > 6 weeks and absence of any other systemic illness which could explain development of arthritis.⁶

The study was approved by institutional ethical review committee and informed consent was obtained from the patients after thorough explanation of study protocols. Data regarding children age, gender and duration of JIA was collected.

The collected information was analyzed with SPSS version 26.0. Descriptive statistics was used to calculate the mean and standard deviation for continuous variables like age and duration of JIA. Frequency and percentage were calculated for gender and types of JIA. Stratification of confounder variables e.g., age, gender and duration of JIA was done. Post-stratification Chi-square test or Fischer’s exact test were applied to determine the effect of the variables on frequency of different forms of arthritis. P-value <0.05 was taken as significant.

RESULTS

In a total of 121 children, mean age was 8.84 ± 1.83 years ranging between 6 – 12 years. Boys constituted 59.5% (n=72) of the study participants. Mean duration of symptoms in children with JIA was 7.93 ± 4.61 months with range of 2–23 months. Oligoarticular JIA was most common diagnosed in 33.1% (n=40) children followed by polyarticular JIA in 30.6% (n=37). Least common type was enthesitis related arthritis (ERA) in 5 (4.1%) patients (Figure-1).

Oligoarticular and polyarticular JIA were more common in males (67.5 % and 67.6%) compared to females (32.5% and 32.4%) respectively. Similarly, all undifferentiated cases (100%) and majority (80%) of enthesitis related arthritis (ERA) were found in males. However, systemic onset JIA and psoriatic JIA were prevalent in females (83.3% and 72.7%) compared to males (16.7% and 27.3%) respectively. This distribution was significantly different between males and females statistically ($p < 0.001$) as shown in Table-I.

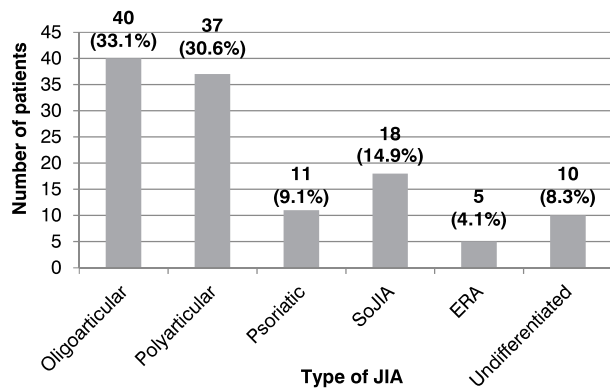


Figure-1

JIA Type	Gender of the patient		P-Value
	Male (n=72)	Female (n=49)	
Oligoarticular	27 (67.5%)	13 (32.5%)	0.001
Polyarticular	25 (67.6%)	12 (32.4%)	
Psoriatic	3 (27.3%)	8 (72.7%)	
SoJIA	3 (16.7%)	15 (83.3%)	
ERA	4 (80%)	1 (20%)	
Undifferentiated	10 (100%)	0 (00)	

Table-I. Distribution of JIA types with regard to gender of the patients (N=121)

Although all types of JIA were relatively more prevalent in age groups below 10 years but did not achieve statistical significance (p=0.70) as shown in Table-2.

JIA Type	Age Groups		P-Value
	< 10 Years (n=80)	≥ 10 Years (n=41)	
Oligoarticular	29 (72.5%)	11 (27.5%)	0.70
Polyarticular	24 (64.9%)	13 (35.1%)	
Psoriatic	5 (45.5%)	6 (54.5%)	
SoJIA	12 (66.7%)	6 (33.3%)	
ERA	3 (60%)	2 (40%)	
Undifferentiated	7 (70%)	3 (30%)	

Table-II. Distribution of JIA types with regard to age groups of the patients (N=121)

DISCUSSION

Children suffering from JIA are generally positive for antinuclear antibodies.¹³ Polyarticular arthritis is labeled when patients have arthritis in five or more joints within the initial six months of disease. In this category, rheumatoid factor (RF)-negative disease exists in 20%-30% of JIA patients and RF-

positive disease exists in 5%-10% of JIA patients.¹⁴

We noted the mean age of the children with JIA to be 8.84 ± 1.83 years while boys constituted 59.5% cases. Mean duration of symptoms in children with JIA was 7.93 ± 4.61 months. Oligoarticular JIA was the commonest type diagnosed in 33.1% followed by polyarticular JIA in 30.6%. Oligoarticular, polyarticular JIA, undifferentiated cases and enthesitis related arthritis (ERA) were more frequent in males in comparison to females. However, systemic onset JIA and psoriatic JIA were common in females in contrast to males. In a study by Gowa MA et al, out of 95 cases with JIA, 54.7% were girls. The commonest subtype found was polyarticular arthritis (53.7%) followed by pauci-articular arthritis in 46.3% cases. Out of 43 boys, 27(62.8%) had pauci-articular, while polyarticular arthritis was present in 35(67.3%) out of the 52 girls.¹⁵

In a study from Hong Kong, authors observed that RF-negative polyarticular (37%) and persistent oligoarticular JIA (24%) were the two commonest subtypes. Most children with JIA were almost 6 and 10 years of age.¹⁶ Another study observed 28% oligoarthritis, 10% RF-positive polyarthritis and 20% RF-negative polyarthritis.¹⁷

Pauci-articular JIA is most frequently seen in the West.¹⁸ Females and earlier age at onset are linked with unsatisfactory functional outcomes. In another study, the ratio of polyarticular arthritis was more in females compared to males and pauci-articular was seen more frequently in males compared to females, while systemic JIA was equally present in both males and females.¹⁹ Similarly in a study by Naz S et al, from Lahore, Pakistan, 50% children with JIA were girls and 54% were between 10–15 years of age.²⁰ Polyarthritis was observed in 72% followed by oligo-arthritis (22.7%) and systemic onset JIA (5.4%). JIA types vary with different geographical regions and racial differences throughout the world. JIA is not a benign illness as it was considered in the past, but less attention is given to this illness.

Being a single center study, our findings should not be generalized. We were unable to note

treatment and outcomes of different types of JIA.

CONCLUSION




Oligoarticular JIA sub-type is the most common subtype in our study. Identification of these different subtypes is beneficial for diagnosis and long-term treatment of such patients. Treatment based on the sub-types and use of new therapeutic drugs in the management of JIA will help in prevention of morbidity.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Muhammad Waqas Khan	Data collection, Data analysis.	
2	Fatima Jabbar	Methodology, Drafting.	
3	Asim Khurshid	Study concept, Proof reading.	
4	Waqas Imran Khan	Data interpretation, References.	