

## Childhood Arthritis: Rate of Different Types

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**Abstract-** To determine the rate of different types of arthritis in children. We prepared a retrospective descriptive study and included the whole 100 cases of arthritis referred to 17-Shahrivar Hospital, Rasht, Guilan during a 3 years period. Using their medical files, data including age, sex, season of admission, history of trauma, signs and symptoms, lab findings and duration of hospitalization were collected. SPSS 13.0 (statistical software) applied for statistical analysis. The most common age of involvement ranged 6-9 years. Septic arthritis, brucellosis, and rheumatoid fever were the most frequent causes of arthritis in our study. Fever and restricted range of motion had the highest rate among different signs and symptoms. Lab data demonstrated leukocytosis, positive CRP, and increased ESR among 74, 79.5, and 73 percent of our patients, respectively. According to the high prevalence of septic arthritis and the arthritis due to brucellosis and rheumatoid fever, it seems that mentioned diseases are still major problems in the issue of hygiene management.

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**Key words:** Childhood, arthritis, septic, brucellosis

### Introduction

Arthritis is an inflammation of the synovia of the joints (1). It may be directly or indirectly caused by infectious agents, transient or chronic idiopathic, or associated with other diseases (2). A delay in diagnosis, treatment, or follow-up may result in heart disease in streptococcal-associated arthritis, visual impairment in chronic arthritis, and joint damage and bone destruction in septic and chronic arthritis (3-7).

Each year approximately 10-100 thousands children develop inflammatory arthritis with many subsequently being diagnosed as juvenile idiopathic arthritis (JIA) (8). Many children continue to have some disability and limitation of their activities of daily living and about 50-70% are estimated to have active disease into adulthood (9). Only a few studies of the incidence of childhood arthritis have been performed, and the results have varied (10-13).

The aim of this study was to determine the rate of different types of arthritis in children and to describe patient characteristics and disease features.

### Patients and Methods

We prepared a retrospective descriptive study and included the whole 100 cases of arthritis referred to 17-Shahrivar Hospital, Rasht, Guilan during a 3 years period. The arthritic disease had to include 1 of the following 3 signs: 1) swelling of a joint; 2) restricted mobility of a joint with warmth and/or tenderness and/or pain; or 3) arthritis demonstrated by ultrasound or MRI.

Using their medical files, data including age, sex, season of admission, history of trauma, signs and symptoms, lab findings and duration of hospitalization were collected.

Written informed consent was obtained from the parents of the children included in the study. All of the analyses were performed by using SPSS 13 for Microsoft Windows (SPSS Inc, Chicago, IL).

### Results

The patients' demographics and disease types were presented in the table 1.

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## Childhood arthritis type

### Septic arthritis

It was the most common etiology of arthritis in our study. Among these patients, 44.1% were under 3 years of age and 2<sup>nd</sup> year of life was the most common age. There were 39.5% females, 62.7% urbans, and 30.2% of cases occurred in autumn. Monoarticular involvement was seen in 93.02% of these patients; hip and knee joints were the most common (34.9% and 32.5%, respectively). Pain was at the top of complaint list (72.1%). Limitation of the involved joint(s) range of motion was the most common clinical finding (90.2%). Leukocytosis, increased ESR, and positive CRP was seen in 83.7%, 83.8%, and 86.1% of all cases, respectively. Only 4.6% of these patients had positive blood culture including coagulase positive and coagulase negative staphylococcus. They were hospitalized for 1-2 weeks. Detailed data was available in the table 2.

### Brucellosis

Of these 15 patients, 47.4% was female. Approximately 52.6% was rural. Brucellosis arthritis was commonly occurred in spring (47.3%).

The patients were involved most commonly in 3-6 years of age (36.9%) and the same rate was reported unpasteurized dairy consumption. In 89.6% of patients,

**Table 1.** Patients' demographics and disease types

Sex; n	
Female	41
Male	59
Age groups; n	
0-3 yrs	26
3-6 yrs	23
6-9 yrs	31
9-12 yrs	20
Season of onset; n	
Spring	36
Summer	20
Autumn	26
Winter	18
Arthritis types; n	
Septic	49
Brucellosis	15
Rheumatoid Fever	14
Henoch Schonlein	9
Kawasaki	6
Reactive	3
JRA	2
Viral	2

**Table 2.** Septic arthritis characteristics

Arthritis Types	Septic Arthritis	Brucellosis	Rheumatoid Fever
Sex; %			
Female	39.5	47.4	41.2
Male	60.5	52.6	58.8
Age groups; %			
0-3 yrs	44.1	10.5	0
3-6 yrs	18.5	36.9	17.65
6-9 yrs	25.3	26.3	35.3
9-12 yrs	12.1	26.3	47.05
Joint Involvement; %			
Hip	34.9	42.1	41.1
Knee	32.5	68.4	64.7
Ankle	16.2	5.2	41.1
Signs; %			
Pain	72.1	84.2	84.2
Limping	65.5	78.9	58.8
Fever	62.7	78.9	64.7
Symptoms; %			
Limited ROM	90.2	94.7	88.2
Swelling	79.06	73.6	82.3
Tenderness	72.1	84.2	84.2

**Table 3.** Patients' characteristics and disease features (HS: Henoch Schonlein)

Arthritis Types; (n)	Reactive (3)	Viral (2)	JRA (2)	HS* (9)	Kawasaki (6)
Sex; n					
Female	2	0	0	4	2
Male	1	2	2	5	4
Age groups; n					
0-3 yrs	0	0	0	0	2
3-6 yrs	3	2	0	4	1
6-9 yrs	0	0	0	4	2
9-12 yrs	0	0	2	1	1
Joint Involvement; n					
Hip	1	1	1	0	2
Knee	2	1	0	9	4
Ankle	0	0	1	0	0
Signs; n					
Pain	3	2	2	9	6
Limping	1	1	1	4	2
Fever	1	1	1	7	6
Symptoms; n					
Limited ROM	2	2	2	9	5
Swelling	1	2	1	5	4
Tenderness	3	2	1	7	6

monoarticular arthritis that is common respectively in knee and hip joints was detected (68.4% vs. 42.1%). Pain and restricted Range of motion were the most common sign and symptom (84.2% and 94.7%, respectively). Leukocytosis was seen in 57.8% of these patients while leucopenia in 21.05%. Increased ESR and positive CRP were detected in 68.4% and 84.7%, respectively. Wright test was positive in all cases, 94.7% with an antibody titer higher than 1:320. Coombs Wright test was performed in 31.05% which was all positive. A titer of higher than 1:160 of 2ME was detected in 9.4% of these children. Approximately, 84.2% of patients with brucellosis arthritis were hospitalized for 1-2 weeks. Table 3 demonstrates the details.

### Rheumatoid fever

Children between 9-12 years of age formed 47.05% of this group. There were 58.8% boys. Urban were 52.9% and the spring was the most common season of disease manifestation (47%). Pain and fever (84.2% and 64.7%) were the most common chief complaint and limited ROM and joint tenderness were the most clinical findings (88.2% and 84.7%, respectively). In the majority of cases, arthritis occurred polyarticular and

migrant (78.5%). The most common involved joint was knee and hip (64.7% and 41.1%, respectively). Leukocytosis was detected in 82.3%. Positive CRP detected in 93.3% while lab report demonstrated increased ESR in all cases. Positive ASO titer was reported in 91.6% of affected children. Hospitalization for 1-2 weeks was registered for 85% of these patients. See table 2 (Where is it?) for more information.

- Reactive Arthritis
- Juvenile Rheumatoid Arthritis
- Viral Arthritis
- Henoch Schonlein
- Kawasaki

Patients' characteristics and disease features of these five final types were abstracted in table 3. (Where is it?)

### Discussion

We included 100 children with arthritis constituted of 59 boys and 41 girls. The most common age of involvement ranged 6-9 years. Septic arthritis, brucellosis, and rheumatoid fever were the most frequent causes of arthritis in our study. Fever and restricted range of motion had the highest rate among

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different signs and symptoms. Lab data demonstrated leukocytosis, positive CRP, and increased ESR among 74, 79.5, and 73 percent of our patients, respectively.

Among patients with septic arthritis, the most frequent form of involvement was monoarticular arthritis with a rate of 93.2%. In different studies, this rate reported 90-100% (1-5,12). However with a different rate; we also demonstrated hip and knee joints to be the most common involved joints in this group (4,7). Leukocytosis seems to be more frequent in our study in comparison to recent reports.<sup>8-10</sup>

Brucellosis formed 15% of all studied arthritis. Similar to other published papers, it occurred commonly as monoarticular arthritis. However, the knee joint was more frequently involved than hip in contrast with Lubani M (14). Arthralgia and fever were the most common sign and symptom.

Finally, rheumatoid fever formed the 3<sup>rd</sup> most common cause of arthritis (14%) with the highest rate among 9-12 years of age. Similar to Ayoub EM study, the patients demonstrated a migrant polyarticular arthritis commonly involved knee, hip and ankle.<sup>13</sup> The patients' characteristics and diseases' features of other less common causes of arthritis were generally similar to the few references available (6,9,11,12). In conclusion, according to the high prevalence of septic arthritis and the arthritis due to brucellosis and rheumatoid fever, it seems that mentioned diseases are still major problems in the issue of hygiene management. Our results in comparison with others suggest that the overall incidence of childhood arthritis may differ between geographic areas.

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