Review Article

Juvenile Idiopathic Arthritis: General Review

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ABSTRACT:

Juvenile idiopathic arthritis (JIA) is the most common rheumatic disease of childhood. It also is one of the more common chronic diseases of childhood, occurring as frequently as juvenile diabetes mellitus. JIA is a new classification of juvenile arthritis developed by the International League Against Rheumatism (ILAR) that is used worldwide; it is replacing the previous American classification of juvenile rheumatoid arthritis (JRA). This article is to highlight the specific points to aid in the diagnosis of JIA and to brush through the current treatment approach emphasizing the change into earlier aggressive management to prevent significant long term morbidity and mortality.

Key words: Arthritis, Juvenile, Rheumatic, ILAR.

Juvenile Idiopathic Arthritis: Classification and Nomenclature

Historical background:

Chronic arthritis in children was first acknowledged in 1864 by Cornil when he wrote of a 29-year-old lady whose chronic arthritis had commenced at the age of 12 yearst hat was followed in 1890 by Diamantberger, who described a series of 38 cases, in which he emphasized the differences between childhood and adult arthritis, and he alluded to the heterogeneous nature of the disease in children.

It was the publication of George Still, a registrar at the Hospital for Sick Children Great Ormond Street, London, in 1896 titled "On a form of chronic joint disease in children" that is widely considered to mark the birth of paediatric rheumatology. In this first important article on childhood arthritis, Still expressed the opinion that there were several types of childhood arthritis. He thus foreshadowed the need for classification and nomenclature of this group of diseases[2]. In the article the condition was loosely labeled «rheumatoid arthritis of children»

Nomenclature:

In USA "Juvenile Rheumatoid Arthritis" 1960s arthritis for 6 weeks <16years excluded spondyloarthropathies. In Europe "Juvenile Chronic Arthritis" 1977 arthritis for 12 weeks (<16Y) included spondyloarthropathy. Mostly included Rheumatoid factor +ve but inconsistent. In 1995 International League of Association for Rheumatology formed an international committee to propose naming and classification of childhood arthritis[3]

Modified in 1998 & 2004. This was a crucial step to unify the spoken language between paediatric rheumatologist in order to improve and encourage research in the speciality.

CURRENT CLASSIFICATION SYSTEM OF JIA (EDMONTON REVISION OF ILAR CLASSIFICATION OF JIA)[5]

ILAR classification of juvenile idiopathic arthritis (JIA) subtypes and clinical

features of JIA

Oligoarthritis	Arthritis of 4 or fewer

joints within the first 6 months

Persistent Affecting not more than 4 joints throughout the disease process

Extended Extending to affect more than 4 joints after the first 6 months

Polyarthritis Arthritis of 5 or more joints within the first 6 months

RF positive Subdivided according to presence of rheumatoid factor (RF)

RF negative

Systemic arthritis Arthritis with or preceded by quotidian (daily) fever for at least 3 days, accompanied by one or more of:

1. Evanescent erythematous rash
2. Lymphadenopathy
3. Hepatomegaly and/or splenomegaly conditions
4. Serosit (Mandatory exclusion of infective and malignant; arthritis may not be present early in course)

Psoriatic arthritis Arthritis and psoriasis or arthritis with at least 2 of:

1. Dactylitis
2. Nail pitting or onycholysis
3. Psoriasis in first-degree relative

Enthesitis-related arthritis Arthritis and enthesitis or arthritis or enthesitis with 2 of:

1. Sacro- iliac joint tenderness of inflammatory lumbo-sacral pain
2. HLA B27 antigen
3. Onset after age 6 years in a male
4. Acute (symptomatic) anterior uveitis
5. History of HLA B27-associated disease in a first-degree relative

Undifferentiated arthritis Arthritis that fulfils criteria in no or more than 2 of the above categories

To classify patients with known JIA into subgroups according to the latest ILAR classification system the following information is required:

History:

Past medical history of number of joints involved at onset, age at onset, and whether there was high spiking fever and other classic features of systemic arthritis family history of psoriasis, iritis, inflammatory bowel disease, ankylosing spondylitis

Examination:

Number of joints currently involved, systemic features such as rash, hepatomegaly, splenomegaly or lymphadenopathy; psoriasis or nail involvement of psoriasis. If possible distinguish how many joints involved for the first 6 months of the disease, how many joints ever been involved and how many joints currently involved.

Investigations:

Presence of HLA B27 and RF.

Diagnosing JIA can be a challenge for several reasons:

Pain is not severe in JIA and children generally adopt protective postures to prevent pain and by doing so accept some degree of stiffness to the joints.

There are no tests for diagnosing JIA; the tests are either for classification, establish activity of the disease or for follow up and monitoring of disease activity.

JIA is a diagnosis of exclusion and that will always be a difficulty. (Table 2)

Current treatment approach:

Until 1990, treatment was based on the pyramid approach initially using various NSAIDs and corticosteroids and gradually advancing to other medications.6

Trials suggest a 12- year therapeutic window to limit joint damage, with optimal control of disease achieved with the use of DMARD during the first 3 months of onset.

Some conditions to consider before diagnosing JIA

Osteomyelitis	Haemarthrosis	Viral arthritis
Septic arthritis	Non-accidental injury	Trauma
Leukemia	Serum sickness	Reactive arthritis
Kawasaki disease	Rheumatic fever	Irritable hip
Malignancy	Henoch Schonlein Purpura	Growing pains
Other autoimmune disease		

The assumption that JIA will usually resolve by adulthood is incorrect

50% to 70% systemic arthritis or polyarthritis & 40% to 50% oligoarthritis continue to have active disease in adulthood. 30% to 40% of patients have significant long-term disabilities including unemployment. 25% to 50% need major surgery, including joint replacement.

Patients with oligoarthritis frequently develop leg length inequality and periarticular muscle atrophy. JIA is associated with a mortality rate of 0.4% to 2% occurring mainly in patients with systemic arthritis, with amyloidosis and the macrophage activation syndrome being the main causes.

Radiologic joint damage, thought to occur late in the disease course, occurs in most patients with systemic arthritis and polyarthritis within 2 years and in oligoarthritis within 5 years. Earlier cartilage damage was demonstrated using magnetic resonance imaging.

In view of above, within paediatrics, there has been a shift towards early aggressive treatment, particularly in those with poor prognostic indicators. (Table 3) 4,9

Poor prognostic indicators in juvenile idiopathic arthritis

Active systemic disease at 6 months in SoJIA (fever, need for corticosteroids and thrombocytosis)

Polyarticular onset and polyarticular disease course

Extended oligo JIA

Female

Rheumatoid factor positive

ANA positive

Persistent early morning stiffness

Tenosynovitis

Subacute nodules

Rapid involvement of the small joints of the hands and feet with erosions

Hip involvement

Higher mean ESR

Generalised lymphadenopathy

With the understanding that JIA is a chronic illness that has the potential for significant morbidity, the pharmacologic treatment has become more aggressive and initiated earlier in the course of disease. NSAIDs are the first-line treatment for relief of joint symptoms, but are not considered disease-modifying.

Methotrexate (MTX) has transformed the outlook for children with juvenile idiopathic arthritis (JIA)7.

Methotrexate takes 6–12 weeks to become effective after commencing treatment or after dose increase and its effect may continue to increase for 9–12 months. However, some patients do not have an adequate response to methotrexate, even at doses of up to 1 mg per kilogram of body weight per week.

The frequency and severity of side effects increase with higher doses of methotrexate. Exacerbation of disease during treatment with stable doses of methotrexate and the need to increase the methotrexate dose over time suggest that drug resistance to methotrexate may develop.

Other biologicals considered after failure of MTX, or side effect development, include:

Etanercept: Soluble tumour necrosis factor (TNF) p75 receptor fusion protein that binds to and inactivates TNFa

Infliximab: monoclonal antibody that binds to soluble TNFa and its membrane bound precursor neutralising its action

Adalimumab: monoclonal antibody which binds to TNFa

Abatacept: protein that selectively inhibits T-cell activation

Tocilizumab: interleukin 6 (IL-6) receptor monoclonal antibody.

Anakinra: is an IL-1 receptor antagonist (IL-1 RA)

In the current climate in Sudan and the financial constraints Methotrexate is and will remain the gold standard medication used in JIA as a disease modifying anti rheumatic drug DMARD. Physicians should be aware of baseline investigations needed prior to commencement and monitoring guidelines once the patient is started on methotrexate.

Learning points

Juvenile idiopathic arthritis is the current used term

RF is required for classification and not for diagnosis of JIA

More aggressive treatment is initiated earlier in the course of the disease in presence of poor prognostic signs

Methotrexate (MTX) has transformed the outlook for children with (JIA)

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