

## **AAV THERAPY IS VERY USEFUL IN TREATING JUVENILE RHEUMATOID ARTHRITIS**

- **AAV Therapy reduces joint pain, joint swelling and improves joint mobility**
- **If the patient is on steroid AAV therapy gradually stops the requirement of steroids**
- **If the patient is on immunosuppressive drugs, AAV therapy stops its requirement**

### **JUVENILE IDIOPATHIC ARTHRITIS (JUVENILE RHEUMATOID ARTHRITIS)**

**Juvenile idiopathic arthritis (JIA)**, formerly known as *juvenile* rheumatoid arthritis (JRA) (Ringold S et al, 2005) is the most common form of persistent arthritis in children. JIA is sometimes referred to as juvenile chronic arthritis (JCA) (Dana D et al, 2007).

Arthritis is the inflammation of the synovium (the lining tissues) of a joint. JIA is a subset of arthritis seen in childhood, which may be transient and self-limited or chronic. It differs significantly from arthritis commonly seen in adults (osteoarthritis, rheumatoid arthritis), and other types of arthritis that can present in childhood which are chronic conditions (e.g. psoriatic arthritis and ankylosing spondylitis).

#### **Aetiology**

It's not known exactly what causes rheumatoid arthritis (also referred to as idiopathic arthritis) in children. Research indicates that it is an autoimmune disease. Current understanding of JIA suggests that it arises in a genetically susceptible individual due to environmental factors. (Phelam J et al, 2006; Forre O et al, 2002)

#### **Onset**

JIA occurs in both sexes. Symptoms onset is frequently dependent on the subtype of JIA and is from the pre-school years to the early teenage years.

#### **Symptoms**

Typically, juvenile rheumatoid arthritis appears between the ages of 6 months and 16 years. Symptoms of JIA are often non-specific initially, and include lethargy, reduced physical activity, and poor appetite. The first manifestation, particularly in young children, may be limping. Children may also become quite ill, presenting with flu-like symptoms that persist. The cardinal clinical feature is persistent swelling of the affected joint(s), which commonly include the knee, ankle, wrist and small joints of the hands and feet. Swelling may be difficult to detect clinically, especially for joints such as those of the spine, sacroiliac joints, shoulder, hip and jaw, where imaging techniques such as ultrasound or MRI are very useful. Pain is an important feature of JIA, but young children may have difficulty in communicating this symptom. Late effects of arthritis include joint contracture (stiff, bent joint) and joint damage. Children with JIA vary in the degree to which they are affected by particular symptoms.

### Extra-articular manifestations

1. **Eye disease:** JIA is associated with inflammation in the front of the eye (chronic anterior uveitis). This complication may not have any symptoms and can be detected by an experienced ophthalmologist using a slit lamp. Most children with JIA are enrolled in a regular slit lamp screening program, as poorly controlled chronic anterior uveitis may result in permanent eye damage, including blindness.

2. **Growth disturbance:** Children with JIA may have reduced overall rate of growth, especially if the disease involves many joints or other body systems. Paradoxically, individually affected large joints (such as the knee) may grow faster, due to inflammation - induced, increased blood supply to the bone growth plates situated near the joints

It has been reported that greater the number of joints affected, the more severe the disease and the less likely that the symptoms will eventually go into total remission.

### **Types of Juvenile Rheumatoid Arthritis**

The 3 major types of JIA are oligoarticular JIA, polyarticular JIA and systemic JIA.

1. **Polyarticular arthritis**, which affects more girls than boys. Symptoms include swelling or pain in 5 or more joints in the first 6 months of disease. The small joints of the hands are affected as well as the weight-bearing joints such as the knees, hips, ankles, feet, and neck. In addition, a low-grade fever may appear, as well as bumps or nodules on the body on areas subjected to pressure from sitting or leaning.
2. **Pauciarticular JRA**, which affects four or fewer joints. Symptoms include pain, stiffness, or swelling in the joints. The knee and wrist joints are the most commonly affected. An inflammation of the iris (the colored area of the eye) may occur with or without active joint symptoms. This inflammation, called iridocyclitis or **iritis** or **uveitis**, can be detected early by an ophthalmologist. Patients with oligoarticular JIA are more often ANA positive, when compared to other types of JIA (2004).
3. **Systemic JRA (Still's Disease)**, which affects the whole body. Symptoms include high fevers that often increase in the evenings and then may suddenly drop to normal. During the onset of fever, the child may feel very ill, appear pale, or develop a salmon pink rash. The rash may suddenly disappear and then quickly appear again. The spleen and lymph nodes may also become enlarged. Eventually many of the body's joints are affected by swelling, pain, and stiffness. It affects males and females equally, unlike the other two subtypes of JIA. Systemic JIA may have internal organ involvement and lead to serositis (e.g. pericarditis).

### **Diagnosing Juvenile Rheumatoid Arthritis**

#### Clinical examination

To diagnose JRA, the doctor will take a detailed medical history and conduct a thorough physical examination. X-rays or blood tests are required to exclude other conditions that can produce similar symptoms.

#### Biochemical examination

- CBC (complete blood count)
- Erythrocyte sedimentation rate
- Blood culture. This can be done to rule out infections.
- Bone marrow examination. To rule out conditions such as leukemia.
- Rheumatoid factor. An antibody produced in the blood of children with some forms of JRA. But it's much more commonly found in adults with rheumatoid arthritis.
- ANA (antinuclear antibody), a blood test to detect autoimmunity. It's also useful in predicting which children are likely to have eye disease with JRA.
- A bone scan, to detect changes in bone and joints to evaluate the causes of unexplained bone and joint pain.

In some cases, the doctor may want an orthopedic surgeon to examine your child's joints and take samples of joint fluid or synovium (the lining of the joints) for examination and testing.

Doctors also may test for certain viral infections such as Lyme disease that may cause similar symptoms or occur along with the arthritis.

### **Treating Juvenile Rheumatoid Arthritis**

The treatment of JIA is best undertaken by an experienced team of health professionals, including paediatric rheumatologists, ophthalmologists, dentists, orthopaedic surgeons, school nurses and teachers, careers advisors and, of course local general practitioners, paediatricians and rheumatologists.

It is essential that every effort is made to involve the affected child and their family in disease education and balanced treatment decisions.

The goals of treatment are to relieve pain and inflammation, slow down or prevent the destruction of joints, and restore use and function of the joints to promote optimal growth, physical activity, and social and emotional development in your child.

### **Medications**

There have been very beneficial advances in drug treatment over the last 20 years. Most children are treated with non-steroidal anti-inflammatory drugs and intra-articular corticosteroid injections. Methotrexate is a powerful drug which helps suppress joint inflammation in the majority of JIA patients with polyarthritis and systemic arthritis. Newer drugs have been developed recently, such as TNF alpha blockers, which appear to be effective in severe JIA. There is little or no controlled evidence to support the use of alternative remedies such as specific dietary exclusions, homeopathic treatment or acupuncture.

### **Physical Therapy**

An appropriate physical therapy program is essential in the management of any type of arthritis. A physical therapist will explain the importance of certain activities and recommend exercises suited to your child's specific condition. The therapist may recommend range-of-motion exercises to restore flexibility in stiff, sore joints and other exercises to help build strength and endurance.

### **Regular Exercise**

When pain strikes, it's natural for your child to want to sit still. But it's important to maintain a regular exercise program. Muscles must be kept strong and healthy so they can help support and protect joints. Regular exercise also helps to maintain range of motion.

At home and at school, your child should maintain regular exercise and physical fitness programs. Safe activities include walking, swimming, and bicycling (especially on indoor stationary bikes). Always be certain your child warms up the muscles through stretching before exercising. Making exercise a family activity can increase the level of fun and enthusiasm.

Consult your child's doctor and physical therapist about sports restrictions. Some sports, especially impact sports, can be hazardous to weakened joints and bones. In addition, be certain your child eats a balanced diet that includes plenty of calcium to promote bone health.

#### **Reference:**

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