

Kids and Scoliosis: What Every Parent Should Know

(Part 1)

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Part 1 – When thinking about your spine, a certain amount of curvature is necessary for us to properly balance, move and walk. The normal curves in your spine are referred to as (i) lordosis in the lumbar and cervical spine and (ii) kyphosis in the thoracic spine. Even though a person's spine can somewhat naturally curve, 3 people out of 100 have "scoliosis". Scoliosis is a condition that causes the spine to abnormally curve from side-to-side into a "C" or an "S" shape. People of all ages can have scoliosis including children and teens. In fact, the worldwide prevalence of scoliosis, including all forms of the disease, is only about 1%.

In this month's article, we look at scoliosis - causes and diagnosis for kids of all ages.

In most cases of scoliosis, no one is sure about the underlying cause; however it has been theorized that there may be a hormonal link in early adolescence. If the curve is severe, it can be visible and cause discomfort. However, where the curve gets very severe, it can cause pain and lung and heart function can be compromised as well as joints. More specifically, as the spine curves abnormally, the involved vertebrae are forced to rotate and vertebral turning impacts the rib cage.

According to the 2011 SSORT Guidelines

- under 10° of scoliosis, a diagnosis of scoliosis should not be made;
- over 30° of scoliosis, the risk of progression in adulthood increases, as well as the risk of health problems and reduction of quality of life; and
- over 50° of scoliosis, there is a consensus that it is almost certain that scoliosis is going to progress in adulthood and cause health problems and reduction of quality of life.

Fortunately, in most cases, scoliosis is mild enough such that no medical treatment is required and it does not negatively impact a child's life. In complex cases, a child with scoliosis may wear a back brace or undergo surgery when their curve or "Cobb's angle" is assessed to be over 30 degrees or at risk for adult progression.

Children and Teens

In general, scoliosis in young children or "infantile scoliosis" is rare; however, in some cases it can be complex. In terms of age, infantile scoliosis typically occurs before age 3 and is seen more frequently in boys. Some cases may progress to severe deformity but many resolve spontaneously without negative neurological symptoms. On the other hand, between the ages of 3 and 10, "juvenile scoliosis" is found more frequently in girls. In this sub-population, spinal curves are at a higher risk for progression and may require surgery. Finally, adolescent "idiopathic scoliosis" (scoliosis of unknown cause) is the most common type of scoliosis and typically occurs after the age of 10 (after the onset of puberty or during a teen growth spurt) to skeletal maturity. Overall, girls are more likely than boys to have this type of scoliosis and may require surgical treatment if non-surgical treatments do not stop the progression of spinal curvature. Often, scoliosis tends to run in families and

is congenital, meaning that it was caused by a vertebral defect discovered at birth. As a result, a child who has a parent, brother, or sister with idiopathic scoliosis should be checked regularly by their doctor. You may ask your child's doctor if they routinely check for scoliosis during regular physicals - especially before puberty - if you believe suspect scoliosis may be an issue. Alternatively, your child can be assessed by your chiropractic doctor.

For the most part, it is girls that are a higher risk to developing scoliosis; however, the aetiology evens out between the genders with more severe cases of spinal curvature.

Causes of Scoliosis

In most cases (i.e. 80% of cases), the cause of the most common form of scoliosis is unknown (i.e. "idiopathic scoliosis"). When it comes to diagnosis, scoliosis tends to develop very gradually over time. As a result, in many cases, a confirming diagnosis cannot be made until a child is between 10 to 14 years of age. However, before making a diagnosis of idiopathic scoliosis, a chiropractor will screen for other possible underlying causes such as infection or spinal injury.

Causes of spinal curves are classified as either non-structural or structural. In non-structural (functional) scoliosis, a normal spine may appear curved which is a temporary, changing curve. This may be caused by an underlying condition such as muscle spasms, difference in leg length or inflammatory conditions such as appendicitis.

The good news is most cases of scoliosis do not require specific treatment; however, if treatment is recommended, children are usually able to return to an active life after treatment.

On the other hand, with structural scoliosis, this may be part of a syndrome or disease (e.g. Marfan syndrome) or an inherited connective tissue disorder. In other cases, structural scoliosis can be caused by neuromuscular diseases (e.g. cerebral palsy, poliomyelitis, or muscular dystrophy), birth defects (e.g. hemivertebra, in which one side of a vertebra does not properly form), tumors, metabolic diseases, rheumatic diseases and connective tissue disorders.

How Is Scoliosis Diagnosed?

On a case by case basis, chiropractors typically take a series of steps to evaluate scoliosis. Note that there is no laboratory tests used to diagnose scoliosis. Firstly, the chiropractor will take a medical history by speaking with the child or teen and his or her parents. The examining doctor will typically look for medical problems that might be causing the spine to curve (e.g. birth defects). Secondly, the patient will undergo a physical examination of his or her back, chest, pelvis, legs, feet and skin. In particular, the doctor will check to see if the head is centered, shoulders are level and whether one side of the rib cage is higher than the other when the patient is bending over.

Some kids show visible signs of scoliosis. For example, some kids may present "humpback" or with one hip higher than the other. On the other hand, scoliosis may not cause any back pain, nor shortness of breath, nor happen suddenly. Patients are assessed for underlying neurological problems causing scoliosis based on certain symptoms (e.g. pain, numbness, paresthesias or tingling, muscle spasms, weakness and bowel and bladder changes).

The exam will provide a baseline from which to measure progress during any treatment for scoliosis. Finally, diagnostic imaging (e.g. x-ray) can confirm the diagnosis of scoliosis. The diagnosis imaging can be used to provide

a measurement of the angle of the spinal curve based on vertebrae at the start and end of a spinal curve. X-rays may indicate if the scoliosis is structural (major) or non-structural (minor). In severe scoliosis cases, a magnetic resonance imaging (MRI) test may also be used or a computed tomography (CT) scan may be obtained through your family physician.

In next month's article, we will examine developing a scoliosis care plan.

As with many other musculoskeletal conditions, early diagnosis and treatment is key - especially for kids. Absent early treatment and intervention, treatment may become more difficult and increases the risks for more serious complications later on. More importantly, early diagnosis and treatment helps to prevent curve progression and deformity. Furthermore, early detection combined with an effective early stage treatment program may produce the best outcomes. As such, it is important that patients, parents, doctors and all rehabilitation health professionals to work together to generate the best outcomes following early detection and intervention through a proper and evidence-based scoliosis care plan.

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