Revisiting Conservative Management Options for Idiopathic Adolescent Scoliosis

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Musculoskeletal care in a primary care practice should be of concern to any health care provider. Back and neck pain is a common complaint and their etiology can be multifactorial and potentially life-threatening. In any of these conditions it is imperative to rule out the most serious causes/pathology, refer to appropriate specialist as needed, and treat any of these conditions in office as appropriate. As natural health practitioners, we understand that many conditions are multifaceted and therefore are not amenable to one-dimensional approaches. This necessitates that the practitioner utilize science-based whole health treatment plans based off of objective diagnostic data.

Idiopathic conditions are a conundrum for a variety of medical and health care specialties. Treatments for many idiopathic conditions become focused on addressing symptoms of the disease process, often without addressing the foundational causes of such conditions because the etiological factors are poorly understood or there is a lack of consensus on how to treat or address foundational causes. Treatment approaches should be founded in science-based approaches which are preferably non-invasive, able to be validated through objective/quantifiable means, and are not cost prohibitive for the patient.

One idiopathic condition which has been largely forgotten by many in the conservative health realm is adolescent idiopathic scoliosis (AIS). Scoliosis is defined as being a lateral curvature of the spine. Generally speaking, scoliosis is not defined as such until the lateral spinal curvature is 10 degrees or more. Reports of incidence of scoliosis range from 4.5% of the population up to 12%. Some scoliotic conditions do have well-defined, known or primary causes, such as congenital/hemivertebra, myopathic as in the case of scoliosis attributed to muscular dystrophy, neuropathic as found in many spinocerebellar degenerative disorders, and other conditions. However, the majority of adolescent scoliosis (approximately 80%) is considered idiopathic and not directly associated to neuropathic, myopathic, congenital, or other primary causes.

AIS occurs between 10-18 years of age. Scoliotic curves in girls are 8 times more likely to progress than in boys. And it should also be noted that the most likely period for scoliosis to progress is from age 10 until the early teens. Perhaps another alarming reality is that those with AIS may see their curves progress even throughout adulthood. The fact that scoliosis is common, is progressive in nature, and can be asymptomatic especially with smaller less noticeable curves. This demands that conservative providers routinely screen for this serious spinal disorder, consider conservative treatment approaches, and refer to other providers as appropriate.

Traditional management of AIS scoliosis has focused on two main treatment approaches. For curves up to 25 degrees a "watch and wait" approach is commonly employed. For those curves above 25 degrees but less than 40 degrees, conservative management with hard bracing is the norm. For those with curves over 40 degrees, corrective surgical care using medical hardware, such as Harrington rods, is often considered. Of course, all of these general protocols are utilized within the context of the patient’s clinical picture, age, cardiopulmonary involvement, etc.

Obviously surgery is a less desirable form of treatment because of the invasiveness of the procedure. It should be noted that surgical outcomes can be variable, with many patients still reporting pain after surgery. Some studies also indicate that post-surgery scoliotic curves continue to progress. Bracing, while less invasive, cosmetically is not appealing to many patients, and may be uncomfortable to use for long periods. And it is fairly well established that the best possible outcome of bracing is that the scoliotic curve doesn’t progress. Because of the obvious shortfalls of these traditional care approaches, this has led many in the health care field to seek other conservative care options. There must be other alternatives to watching and waiting.

Conservative care providers are perfect for evaluating and managing scoliosis patients. Providers must have the diagnostic training and scope to rule out underlying pathology, refer to other specialists as needed, and based on objective findings (radiography, lab testing, MRI, etc.) prescribe whole health treatment programs. Those with AIS do present to our offices, and we need to be prepared to offer conservative care options, helping them to obtain optimal whole-health function.

While caring for these patients, we must certainly need to monitor them for signs of complication from the condition itself. One obvious complication with scoliosis is the potential affects on the cardio-pulmonary system. Pulmonary hypertension and respiratory failure may certainly occur in severe cases. Assessing lung and cardiac function, via a multi-faceted approach, including the use of base-line and follow up spirometry testing and others tests, is standard in many offices and helps to identify patients who may need increased levels of care and/or in pursuit of potential improvement of their condition.

It is also very likely that patients with an unknown scoliotic condition will present for other reasons besides scoliosis care. During the initial exam, a scoliotic condition may be identified for the first time. Personally, I have diagnosed multiple patients with scoliosis who knew they had back and/or neck problems but had no clue their condition was symptomatic of scoliosis. Unfortunately, many providers don’t realize that conservative care options, ones represented in the academic literature, are real viable

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choices to employ in clinical practice. Furthermore, and perhaps even more concerning, is the distinct possibility that providers are missing an opportunity to intervene in a patient’s life and at the very least identify this serious condition which can have a dramatic impact on overall health.

A variety of non-invasive/non-surgical interventions have been employed and utilized by practitioners, yielding good results. There are a variety of flexible/non-hard braces that are presently being tested as potential treatment approaches. Multiple studies, including random control trials, reveal the wide use and effectiveness of exercise and scoliosis rehab programs in preventing progression and decreasing Cobb angles. Furthermore, additional treatment approaches found in the academic literature utilize neuromuscular education, traction, and specific treatment procedures that aim to rehabilitate the spine and reduce scoliotic curves without the use of bracing or surgery.

It is also worth noting that conservative scoliosis care is becoming more mainstream and accepted in health care professional circles. There are now international conservative care scoliosis associations, such as the Society on Scoliosis Orthopaedic and Rehabilitation Treatment (SOSORT), which advocate continued use of and research for conservative management options of scoliosis conditions. Providers from varied specialties are represented here, revealing a level of conservative care provider collaboration that previously did not exist.

AIS and the complex nature of it necessitates the need for practitioners to address other underlying factors that may be causative, in addition to classic neuromusculoskeletal approaches. Due to genetic variability and the apparent genetic connection found in scoliosis conditions, it makes sense that different metabolic and physiologic factors may influence AIS and its severity. Specifically, certain chemicals and factors affecting neurochemistry are correlated with these scoliotic conditions and, therefore, may be important issues for practitioners to address in their whole-health treatment plans.

Serotonin and melatonin have been long postulated to be involved in the development of scoliosis. Early studies by Thillard and countless others have revealed that removal of the pineal gland from bipedals, such as chickens, induced scoliosis. The pineal gland is principally involved in the production of melatonin. Melatonin and precursor substrates such as serotonin and 5HTP may also have similarly influencing affect on neurochemistry, the causation and/or progression of AIS. Studies have also revealed that abnormal serotonergic activities are present when elongation of the spinal cord occurs. Other studies have found lower levels of serotonin in scoliotic patients. Because of the apparent correlations noted between scoliosis and these neurotransmitters and their intermediaries, supplementation with neurotransmitter precursors have been suggested. Companies such as Neuroscience and others may be beneficial in evaluating neurotransmitter profiles as well.

Interestingly, both vitamin D and omega 3 fatty acids have both been linked to serotonin up regulation. Vitamin D, which is known to be a common area of deficiency in the United States, has been shown to potentiate serotonin activity. And the DHA component of omega 3 fatty acids has also been shown to have positive affects on up-regulating serotonin. Interestingly enough, both of these have also been implicated in depression and anxiety conditions, and studies also revealed a connection between AIS and depression. Testing is widely available for both of these nutrients, allowing providers to tailor specific potential supplementation needs for patients.

Other genetic factors may be implicated in the creation or progression of AIS as well. Genetic testing, although not in its infancy, continues to evolve and become much more detailed every year. Several genetic testing options are available in the market place, such as Scolioscore, assessing the likelihood of progression of AIS. Other genetic testing attempts to identify biochemical pathways that are variant, affecting formation and progression of many conditions. For example, the now often tested MTHFR genetic test may reveal aberrations, or polyvariance in methylation, mucopolysaccharide and lipo-protein synthesis, and other pathways. Interestingly enough, it can be demonstrated that reduced serotonin levels are found in those with MTHFR mutations. Those with these genetic mutations may benefit from methylated nutrient support, such as methylfolate. There are increasingly more laboratories that are offering genetic testing options which may be of benefit to our scoliosis patients as well.

For the majority of AIS patients spinal curvature is just one of many maladies that they are dealing with. Many AIS patients experience depression. The fact that individuals with scoliosis have a decreased life expectancy by 14 years should be a indicator that these patients need all the help we can give them. For the sake of these patients we need to take a multifaceted approach in addressing their myriad of potential concurrent clinical presentations. Dietary factors, deficiencies, and lifestyle factors all should be addressed to direct these patients to a more optimal health status. It is encouraging that there are researched-based treatment approaches in present use that can be objectively measured, with reproducible results.

The purpose of this article is to propose a re-exploration of conservative management of scoliosis by conservative care physicians. There is a body of research that supports conservative management options for scoliosis, as an
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alternative to surgery, hard bracing, and “watching and waiting.” In addition to rehabilitative and other neuromusculoskeletal corrective methods mentioned earlier, nutrition and biochemical factors should be considered as a component of conservative management in these cases. As demand for less invasive treatment approaches increases and laboratory/diagnostic testing becomes more standardized, utilization of conservative care services for patients with AIS undoubtedly will become a treatment of choice. Patients need whole health approaches, and we as conservative care providers need to be ready to fill this void in the primary health care.

References


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