

# CASE STUDY

## Resolution of Chronic Otitis Media, Difficulty Sleeping, and Tactile Hypersensitivity in a Child Undergoing Subluxation-Based Chiropractic Care

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### Abstract

**Objective:** To describe chiropractic care of a 2-year-old female with chronic otitis media, difficulty sleeping, irritability, skin sensitivities to clothes and being held or touched.

**Clinical Features:** A two year old female was brought into the office by her mother with complaints of chronic otitis media, inability to sleep through the night, and skin sensitivities/tactile hypersensitivity to clothes and touch. Medical doctors had diagnosed the patient with chronic ear infections and a fractured clavicle due to birth trauma. The patient also had episodes of temper tantrums and violence towards her older sister. Subluxations were detected in the cervical, dorsal, lumbar and sacroiliac region according to Activator Methods protocol.

**Intervention and Outcomes:** The patient received chiropractic care utilizing the Activator Methods Technique. After three adjustments the patient slept through the night for the first time. After four months of care she no longer had ear infections, she was consistently sleeping through the night, was less irritable, able to wear clothes without discomfort, and much more willing to hug and be held.

**Conclusion:** A positive outcome in a case of a two year old with chronic otitis media, sleeping difficulties, tactile hypersensitivity and vertebral subluxation is described. Research has shown a relationship between chronic ear infections and upper cervical subluxations as well as a relationship between upper cervical subluxations and sleeping difficulties. There is a need for further research to show the connection between vertebral subluxations, chronic otitis media, sleeping difficulties, and sensory integration.

**Key Words:** *Chiropractic, otitis media, sleep, Activator Methods, adjustment, skin sensitivities, sensory integration dysfunction, autism spectrum, tactile hypersensitivity, vertebral subluxation*

### Introduction

Otitis media is currently defined as inflammation of the middle ear without reference to causation or etiology.<sup>1</sup> Otitis media has also become the most common infection in children that are sick as well as the number one reason antibiotics are prescribed to children.<sup>1,2</sup> Otitis media has many subgroups: otitis media with or without effusion, chronic otitis media, acute otitis media, and bacterial otitis media.

Otitis media is a multidimensional infection that has many causes and a multitude of epidemiological risk factors.

Children that have a sibling history of otitis media, males, formula fed infants, being exposed to second hand smoke, seasonal effects and allergies are at a greater risk of experiencing otitis media.<sup>3</sup>

Otitis media has also been linked to upper respiratory infections that cause congestion throughout the respiratory tract into the Eustachian tube causing fluid build up in the ear creating an ideal environment for bacteria to grow.

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There are studies that show improvement in ear infection following chiropractic intervention. For example, Phillips reported children that received chiropractic care were far less likely to get a recurrence of otitis media than those children receiving antibiotics.<sup>4</sup>

Sleeping difficulties in infants can be stressful on the parents as well as the child. One study found that roughly 25% of all infants have sleeping difficulties, however sleeping patterns in infants vary amongst infant to infant.<sup>5</sup> What may be normal for one patient may not be normal for another. However, one thing has been noted between infants that have difficulty sleeping and those that do not; children that have difficulty sleeping will wake with such distress that they are unable to soothe themselves and will then cry until a parent comforts them; whereas children that do not have difficulty sleeping will wake and soothe themselves back to sleep.<sup>6</sup>

Skin sensitivities or tactile hypersensitivity have been noted on the Autism Spectrum as well with Sensory Integration issues. Autism Spectrum has been opened to include a wide range of signs and symptoms. It has been stated Autism is a multi-causal disorder and that children who are irritable, inconsolable, and sensitive to being touched may in fact have early signs of autism.

It has been theorized that what may be causing this type of behavior could be related to a sensory integration dysfunction in the brainstem and cerebellum, which may create a sensory overload causing the child to shut down and be irritable to anything outside of their comfort zone.<sup>7</sup> A child can have a sensory integration dysfunction that causes them to over react or under react or even a combination of both. This case deals with a child that had signs of being under reactive and over reactive in regards to sensory integration dysfunction.

## Case Report

### *History*

The patient was brought in by her mother with chronic otitis media, difficulty sleeping, irritability, skin sensitivities to clothes and being held or touched. Case history revealed that the mother had been induced a week early as the doctors were concerned about the baby being too big. The patient was born with a broken clavicle. X-rays were taken by the MD six weeks after birth and showed that her clavicle was healing. At the age of 2, the child was taking at least two hours to get to sleep and would not sleep for more than four hours at a time. She had had over 20 ear infections, severe allergies requiring a nebulizer, severe behavior problems including temper tantrums, irritability, and skin sensitivities to clothes, and sensitivities to being touched or held.

The child had been put on antibiotics to treat the otitis media without much improvement. The child's mother did some of her own research and felt that if she could improve the duration and quality of her child's sleep, she might be able to improve the child's behavior and immune system. She put her child on Valerian root, which worked well, and the child was no longer fighting to get to sleep for two hours and was actually starting to sleep six to seven hours at a time.

However, repeated ear infections interfered with her getting into a healthy sleeping pattern. This cycle continued until she was brought to the chiropractor.

The child would also have outbursts towards her sister and threw temper tantrums. She preferred to be naked as anything close to her skin seemed to irritate it. She did not like to be held or cuddled and was very particular about things touching her and about being touched. She was unable to dine out with her family, drive in the car, or go out and run errands with her parents without throwing temper tantrums or having some sort of outburst

### *Intervention*

Activator Method technique was utilized in the care of this patient. Activator Methods is a chiropractic technique that addresses vertebral subluxations throughout the spine as well as addressing subluxations in the extremities. This technique is a low-force high-speed adjusting technique that was formed as a synthesis of Logan Basic, Deerfield-Thompson leg checking, and Directional Non-Force Technique.<sup>8</sup>

Subluxations are detected by use of leg checks with various isolation tests, stress tests, and pressure tests. An isolation test makes the subluxation worse by activating the muscles around the segment in a feed forward response pulling the short leg shorter. A stress test is one that involves pushing the vertebra in the direction of the subluxation to make it worse and draw the leg short whereas a pressure test is when the vertebra is pushed in the line of correction to see if it will balance the legs.<sup>9</sup> Activator Technique addresses the body's biomechanics and aims to restore proper biomechanics through a low-force, instrumented delivered adjustment.<sup>8</sup>

The initial chiropractic examination revealed a right short leg in position #1 that lengthened in position #2. Position #1 is with the legs just prone flat on the table and position #2 is when knees are flexed to 90 degrees passively. The doctor is looking for a change in the leg lengths from position #1 to position #2.<sup>9</sup> Activator protocol showed subluxations at C1, C2, and Dorsals 2-6.

### *Chiropractic Care*

Low-force high-speed specific adjustments were given as per Activator Method protocol in the reduction of the vertebral subluxations found throughout the spine. The patient received all of the adjustments in the prone position with the Activator Method adjusting instrument. The doctor then began the Basic Activator protocol to find the subluxations in the spine. The knees were checked with a pressure test in the line of correction to check for any knee subluxation involvement, there was none.

Next the pelvis was pressure tested in the line of correction to determine if this would balance the legs. The left ilium was pressure tested inferior to superior, I-S, and the right ilium was pressure tested superior to inferior, S-I. Once the knees and pelvis were clear the doctor then moved on to the lumbar. The doctor performed all pressure tests in the lumbar pushing the vertebrae P-A, I-S and slightly L-M, and this still found no neurological involvement. This same technique was applied in

the dorsal spine until a subluxation was detected at T6. The T6 vertebra was then adjusted P-A, I-S, and slightly L-M which balanced the legs.

The chiropractor stressed the rest of the vertebral bodies A-P, S-I, and slightly M-L in the line of subluxation to see which vertebra would draw the legs short. Subluxations were found at T5, T4, T3, and T2 with the same corrections as about a P-A, I-S, and slightly L-M thrust with the Activator adjusting instrument. The same method was applied to the cervical spine with subluxations found at C2 and C1. C2 was corrected with a P-A, I>S, and slightly L-M thrust with the activator instrument while C1 was corrected with a direct L-M thrust.

### Results

The child showed immediate results. After her first adjustment her mother stated that the patient was a little less aggressive towards her sister. After three adjustments she slept through the night for the first time ever and came into the office and gave the chiropractor a hug. After four adjustments she started to experience less outbursts and was nicer to her sister.

After two months of care she came into the office and gave everyone a hug. Her mother stated that clothes were no longer an issue but she was still having trouble wearing socks and shoes. After four months of care her ear infections had resolved, she consistently slept through the night, had fewer outbursts, her skin sensitivities had resolved, and she did not have issues with being held or touched. The patient has continued to receive chiropractic care and is now a full functioning normal 8 year old that loves school, ballet, and tap.

### Discussion

More than two thirds of children will have experienced an ear infection by the age of three and of them 33% will have had three or more episodes.<sup>10</sup> Otitis Media is due to the improper drainage of the Eustachian tube causing the build up of fluid in the ear and a providing a place for bacteria to thrive. Once the bacterial has built up the sequelae of otitis media can start. This can include tympanic membrane rupture, tympanosclerosis, cholesteatoma and in rare cases encephalitis.<sup>3</sup>

Otitis media is most often caused by *Streptococcus pneumoniae*, however otitis media can be caused by a number of viral and bacterial organisms. Otitis media should be considered as a possibility when a child presents with symptoms of pain in the ear, fever, tugging on the ear, irritability, and persistent crying.<sup>11</sup>

The allopathic method of treatment can include antibiotics, prophylactics with antibiotics, Myringotomy, Typanostomy, and surgical removal of tonsils and/or adenoids.<sup>3</sup>

Barham-Floreani cites a study that was conducted over an 18 year time period of 4,600 cases of upper respiratory infections in 100 different families and found that when upper cervical spinal motion was restricted, ear infections developed more frequently. Once that restriction was removed, further incidences of otitis media did not develop.<sup>12</sup>

Fysh concluded that the care of 5 children with recurrent otitis media was effectively treated with chiropractic adjustments. The children had no residual symptoms after receiving chiropractic care.<sup>13</sup>

Peet addressed another theorized cause of otitis media and upper respiratory infections. She found that it was linked to the improper drainage of the deep cervical lymphatics due to muscle spasms or increased muscle tone - adding to the fact that children already have a smaller drainage system than adults.<sup>14</sup>

Peet found that correcting the vertebral subluxations in the cervical spine restored normal function and reduced the increased muscle tone and muscle spasm allowing the lymphatic system to drain. Once normal drainage is established, the risk of a reoccurrence of otitis media is decreased drastically.<sup>14</sup>

Sleeping difficulties in infants are hard to define, as there is no definition of what a normal pattern is. MacMillan states that when the parent is unable to discern between daytime sleep and nighttime sleep periods, it may be suggestive of a possible underlying pathology.<sup>15</sup> It has been estimated that roughly 25% of infants have difficulty sleeping and 46% of new mothers noted sleeping disturbances in their child. It had been generally agreed that pharmacology is not the most effective way to treat a sleepless child.<sup>5</sup>

In the same study, MacMillan found that by removing the upper cervical subluxation, the infant had dramatic resolution of sleepless nights and improvement in cervical range of motion. During the examination of the particular infant used in MacMillan's case, it was noted that the infant would only feed on one side and had great difficulty rotating the head to the left. These are signs of possible upper cervical subluxation.<sup>15</sup>

Biedermann found that 5.3% percent of infants had difficulties sleeping and of that number, 93% had suboccipital subluxations seen on x-ray.<sup>16</sup> Biedermann also reported that infants had improvements in their sleep following a manipulation to the upper cervical spine.<sup>16</sup>

Miller found in a study done on 116 infants that although the duration of sleep did not seem to change significantly following a chiropractic adjustment, the number of infants that were reported as restless sleepers did decrease and the number of infants reported to sleep deeply increased. The parents also report that the infants were able to fall asleep with less struggle.<sup>5</sup>

Skin sensitivities have been noted in children with sensory processing disorders. Sensory processing involves the body's ability to take in, organize, and make sense of what is occurring in the environment around them. Inability to properly take in, organize, or make sense of what is happening is seen in as high as 90% of individuals who fall on the Autism Spectrum Disorder (ASD).<sup>17</sup>

The ASD includes a multitude of signs and symptoms; including but not limited to: skin sensitivities to touch/pressure (especially light touch), reluctance to being

held or cuddled, and outbursts of anger towards parents and siblings. All of the above signs/symptoms were demonstrated by the patient for the first two and a half years of her life.

Sensory processing disorders or sensory integration dysfunction causes the child to have one or more senses that are over reactive or under reactive to stimulants in the environment. The child can have difficulty planning and executing a response to the stimulus causing either an over reactive emotional response or an under reactive emotional response.

Sensory integration dysfunction affects their ability to distinguish between stimuli that should remain in the background, like wearing a shirt, to a stimulus that is significant. It is theorized that the sensory disruption could be due to the brain receiving too much input or too little input or a combination of both. This neurological disorganization can be due to failure of the neurons to communicate or inconsistency of reception of sensory information to the brain from the body.<sup>18,19</sup>

This is where subluxation comes in as subluxation effects the nervous system, causing interference in the neuronal pathways to and from the brain. In a case series Vallone reports on chiropractic adjustments combined with cranio-sacral therapy and proper diet showing a reduction in aberrant sensory stimuli and a decrease or resolution of the sensory integration dysfunction.<sup>18</sup>

There is a limited amount of research on the effectiveness of chiropractic care on children with ASD. In this case, the child showed improvement in all three areas discussed in this paper. It is hypothesized that the effect of the adjustments on the nervous system may be what caused the resolution of the chronic ear infections, sleepless nights, and sensory integration dysfunction. More research on the subject is needed.

## Conclusion

This report describes the chiropractic care of a 2-year-old female with chronic otitis media, difficulty sleeping, and sensory integration dysfunction. It is not known if the resolution of the fore mentioned was solely from chiropractic care.

In this case there was resolution of chronic otitis media in just four months of care, improvements in sleep patterns after the third adjustment and changes in her behavior and sensory integration after three visits with more significant changes after four months of care. Chiropractic care had a positive effect on this child's life. The connection between the vertebral subluxation and the nervous system in regards to

otitis media, sleep patterns, and sensory integration should be further investigated.

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