* Sleep: the solution seemed simple: — finding the source of the problem more difficult

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Case story

Max was brought to the chiropractic clinic by his mother in 2003 when he was nearly five years old. He ran into the clinic in an agitated manner. He did not engage, or speak, had no eye contact, ran from corner to corner, barked, plucked at his clothing and would not calm or be distracted. His mother looked exhausted.

Max was a young boy with special needs. He had received full medical and educational investigations and was assessed as being severely developmentally delayed with a diagnosis of autistic spectrum disorder and attention deficit hyperactivity disorder (ADHD). His parents' main concern was his sleep disruption and they took it in turns to be up through the night with him to keep him safe. The entire family were sleep deprived. Amongst many unusual behavioural traits, Max had put bread in the video recorder, tried to open windows & doors, set light to things and commonly hid under tables with his hands over his ears in social situations; the list was lengthy.

Following a clinical observation, coupled with palpation that confirmed cranial and cervical trauma, a treatment plan using the McTimoney Chiropractic technique was discussed and agreed (see www.mctimoneychiropractic.org). This first encounter and clinical adjustment enabled Max to sleep that night and subsequently. The course of care had led to a positive outcome for Max and his family. His father, a well known journalist, wanted to help other children with similar problems and interviews followed (Edwards 2005).

The consultation with Max led to an influx of children coming to the chiropractic clinic with special needs. Many of these disadvantaged children did not sleep, and their diagnosis had been obtained through the same route as that undertaken by Max. While they were all receiving additional support, care and assistance with needs and education, following chiropractic treatment, they were helped in the same way as Max and their function and abilities changed. It seemed once these children slept, their development improved.

A review of the literature revealed a plethora of studies reporting the effects of sleeplessness and sleep deprivation on cognitive function, memory, semantic memory, and faltered precision skills in adults (Banks & Dinges 2007), but the correlation between adult skill changes through sleeplessness and child developmental delay through sleeplessness has scarcely been considered. Much time, effort and economic consideration are given to detecting, referring and diagnosing developmental delay with little, if any, due consideration of the potential impact of sleep disturbance on a child's development (Carskadon *et al* 1981, Randazzo *et al* 1998). Sleep disorders in children often differ to those in adults (Selton *et al* 2000). Adults appear sluggish, slow and tired

(Durmer & Dinges 2005), whilst children experience heightened activity, an inability to sit still and may display symptoms of ADHD (Dahl 1996). High rates of sleep disturbance (often severe and seen as poorly managed and persistent) are consistently reported in children with a learning disability or developmental delay (Quine 1992, Stores & Wiggs 1998).The question had to be raised: which came first, sleep disturbance or developmental delay?

This led to a retrospective review of the records of all the children attending the clinic to isolate commonalities then post-treatment questionnaires were sent to parents and the results tabulated. The record cards for 145 children were analysed and this revealed that 138 children had suffered sleep disruption outside the boundaries of normal child wakefulness. All patients presented with one or more areas of developmental delay, with many reporting behavioural issues. The results revealed that most children suffered sleep disruption, being up in the night several times and for long periods, irrespective of age; these children also suffered developmental delay. In addition it appeared that a high percentage (95% [*n* =138]) had sustained some form of birth trauma. Following treatments, all parents observed improvements in children's ability to settle and sleep, as well as in their behaviour. The chiropractic intervention utilised the McTimoney technique, uniquely suited to the cephalo caudal development of children. The commonalities included cranial and cervical anomalies affecting cranial nerve function of the child. The results suggest that chiropractic intervention at an early age can improve sleep disturbance and restore optimal functioning of the nervous system, diminishing a child's potential to experience developmental delay.

Feedback from parents

Across the study, there appeared to be reluctance on the part of the parents to discuss the sleep disruption of their child, or simply a resigned acceptance that this was unique to their child. Most parents, when questioned further, told us that sleep disturbance had been an issue at some time since birth. We felt that the parents attributed very little importance to the possible effects of sleep disturbance on the behaviour of their child, nor did they link sleep disturbance to developmental delay. Moreover, in many cases, parents were openly seeking help with the developmental delay, but often ignored or denied their child's behavioural problems, which were often not mentioned in the pre-visit questionnaire or the first consultation.

Many parents were aware that their child was unusually sensitive to noise or changes of routine and they had found ways of coping with this. Most had managed the broken nights by sharing periods of sleeplessness between partners and dividing up the night or the week, including strategies such as sleeping in separate beds and rooms. Parents would move around from bed to bed throughout the night to accommodate the child. There were also tales of partners and families driving around until the baby or child fell asleep. All admitted the emotional strain on relationships within the family, including, in some cases, the breakdown of the parental relationship.

Many mothers had been told they were suffering postnatal depression, with little attention being paid to the impact of sleep disturbance on their well-being. Several also admitted feelings of inadequacy and an inability to manage their parenting role effectively. All parents noted that professional advice was aimed at controlling the child's behaviour associated with getting them to sleep and this consisted of ways to manage the child and routine better, eg tightly swaddling the infant, controlled crying, star charts for children staying in bed or medication. All parents reported taking the baby/child to their local doctor, GP, midwife, health visitor or paediatrician for advice and reassurance. Yet no parent linked sleep disruption with developmental delay or the notion that their child may have been in discomfort or in pain. Most parents said that attending the chiropractic clinic was a last resort, where it would appear, all preceding strategies had failed.

From the records it was found that all children in the study presented with one or more areas of neurological dysfunction — all with delay in some area of development, some with severe social, language or gross motor delay. The commonalities required further investigation and it was this that led to a more in-depth review of (the records of) all the babies attending clinic presenting with sleep problems who may have suffered some form of trauma surrounding their birth (Edwards *et al* 2010).

The results of these studies endorse the suitability and benefits of certain types of chiropractice and advocate wider recognition, accessibility and use. Early referral is paramount and midwives, health visitors and paediatricians are in an ideal position to identify infants who may be at risk, particularly through a difficult labour. Intercommunication and referral opens a healthy dialogue between disciplines benefiting a wider catchment and choice for infants and their parents and carers. The pressure on the infant cranial and cervical spine in utero and during the birthing process can effect the nervous system, especially cranial nerves as referenced in the article. Cranial nerve function is paramount for, efficient feeding, swallowing, gag reflex, social smile, amongst all of the 12 cranial nerves. Chiropractors aim to restore nerve function and the McTimoney Chiropractic technique is uniquely suited for infants as it mirrors their cephalo-caudal growth and development.

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The above is a summary of a case study of Max presented at the Birmingham Children's Hospital in 2006, and retrospective record-card study and questionnaire analysis aided by colleagues Claire Gibb and Jo Cook.

Website resources

www.abacushealth.co.uk (links to *The Telegraph* article 'He was lucky to be walking.')

www.gcc-uk.org (register for chiropractors).

www.mctimoneychiropractic.org (McTimoney Chiropractic technique)

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Editor's note:

This article arises from the report of a survey into chiropractic use in children published in the *MIDIRS Midwifery Digest* last year (Edwards *et al* 2010). On an anecdotal basis, many of us are aware of the problems and distress that arises for a whole family where the child has long term problems sleeping at night. As the article above demonstrated, there is a role for chiropractic advice and treatment where this is occurring in infancy and early childhood, but what has not been so evident is the longer-term effects of this in the family. Midwives and health visitors are often made aware of issues that are affecting a family's well-being. This article sets out the background to the original study and highlights the wider implications of acknowledgement of childhood sleep deprivation on function and ability. Where such information can be made available at an earlier stage and such problems identified and alleviated, the outcomes could be so much better.