New study identifies risk factors in severity of 'flat head syndrome' in babies

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A new study by physician researchers from Hasbro Children's Hospital and Children's Hospital Boston identifies risk factors for the severity of asymmetrical head shapes, known as deformational plagiocephaly (DP), or more commonly as flat head syndrome. The study was published in the March 2009 edition of the *Journal of Craniofacial Surgery*.

Since the 1992 campaign by the American Academy of Pediatrics, many parents have been placing babies on their backs to sleep, as it is believed to reduce the risk of sudden infant death syndrome (SIDS). As a result, there has been a 40% reduction in the incidence of SIDS. At the same time, there has been a noted increase in the incidence of DP, affecting as many as one in six infants, which may be connected with the change to the supine sleeping position in children. DP, however, can also occur with prone positioning as well.

Many researchers have published reports of risk factors for the development of DP, which include supine positioning, firstborn infants, prematurity, developmental delay and others. While these variables seem to be associated to some extent with the development of DP, the influence of each of those variables on the degree of asymmetry in DP has not been determined to date. With this in mind, physician researchers from Hasbro Children's Hospital and Children's Hospital Boston developed a study to determine the relationship between predisposing factors for DP and the severity of the flattening.

The researchers looked at a number of factors in the infants as well as

maternal variables associated with pregnancy. Of particular note in their findings is the severity of flattening was not associated with infant sleep position.

Albert Oh, MD, who is also a professor of surgery at the Warren Alpert Medical School of Brown University, says, "We found a trend toward less flattening in infants who slept prone, or in positions that were alternated. Interestingly, however, while supine positioning has been a well established risk factor for the development of plagiocephaly, we were not able to demonstrate a logical correlation to indicate more severe flattening from the supine position."

In addition, the researchers identified a relationship between gestational age and the severity of the flattening, where a lower gestational age was associated with more severe flattening. Their findings also indicate that boys in the study had significantly more cranial asymmetry than girls, and their data also indicated that males are at a higher risk for more several flattening. Also of note, the researchers found no association between the use of orthotic devices and the severity of cranial flattening, calling into question the effectiveness of the use of such devices in the treatment of or prevention of DP.

The researchers also found a link between multiple-birth pregnancies and the degree of cranial asymmetry. Oh notes, "In our study, infants with DP who were the product of a multiple-birth pregnancy were disproportionately higher than in the general population and greater than in previous studies. This was the only pregnancy-related variable we found to be associated with the severity of DP of the eight different variables we assessed."

Oh says, "This study is significant because we were able to find direct correlations between a variety of variables and the severityof DP in infants. Ultimately we have shown that there are certain clear risk

factors for more severe flattening in infants."

Their findings also concur with other reports, supporting the widely accepted belief that the development of plagiocephaly is progressive, beginning during early infancy. The researchers also report that maternal demographics had little effect on the severity of DP.

For the study, infants referred to Hasbro Children's Hospital and Children's Hospital Boston for DP between January 2006 and December 2007 were recruited. Parents completed a questionnaire and a focused physical exam was performed, which included a measurement of the difference in oblique cranial lengths, known as the transcranial difference. Out of the 576 with cranial asymmetry who were prospectively enrolled, 142 were excluded, leaving 434 patients with DP enrolled in the study. There were twice as many male as female infants, and the mean gestational age was 36.5 weeks. The mean age at presentation to the craniofacial programs at the hospitals was 5.8 months. Eight-three percent of the infants were reported to have a head positional preference, with 42.6 percent of those infants diagnosed with torticollis (the head leans to one side due to contracted neck muscles on that side) as the reason for the head positional preference. Nearly all of the infants (97.5 percent) in the study appeared to be developmentally normal.

Source: Lifespan