Mechanism for Weight Gain Among Massaged Pre-term Babies

Following up on a groundbreaking study showing that premature newborns who are massaged gain more weight than non-massaged preemies, the researchers at Touch Research Institutes (TRI) at the University of Miami Medical School now have a good idea why.

In the study "Vagal activity, gastric motility, and weight gain in massaged pre-term neonates," published in July in The Journal of Pediatrics, the TRI team revisited a 1986 study that first revealed that massage therapy facilitates weight gain among pre-term infants. Additional studies have yielded the same result. This time, researchers wanted to find out why. They set out to test whether moderate-pressure massage stimulates vagal activity, leading to more efficient food absorption through increased gastric motility and the release of food-absorption hormones, such as insulin.

In the study, which was conducted through the University of Miami/Jackson Memorial Hospital Neonatal Intensive Care Unit, 48 hospitalized pre-term infants were randomly placed into a control group, a massage-therapy group, or a sham massage-therapy group. The massage-therapy group received three 15-minute periods of massage per day for five days. First the infant lay prone, and was stroked with moderate pressure for five one-minute segments: from the top of head to the neck and then back again; from the neck across the shoulders; from the upper back to the waist and back again; from the thigh to the foot and back on both legs; and from the shoulder to the hand and back again on both arms. In a supine position, both of the infant’s legs and arms were extended and flexed.

The sham group received the same protocol, except light pressure was used during the massage strokes.

Measurements taken during the study included mean weight gain and calories consumed per day, heart rate, automatic nervous system function and gastric motility. Analysis of variance (ANOVA) was used to assess equivalence across groups and for group differences in weight gain, calorie consumption and days until discharge. Group (control vs. massage vs. sham) by time (pre/during/post) ANOVAs were conducted on vagal and sympathetic activity and gastric motility measures. Pearson’s correlation analysis was used to assess the relationships between weight gain, vagal activity and gastric motility.
Data analysis revealed that weight gain was significantly related to changes in vagal tone during the massage, and changes in gastric motility after the massage. The massaged pre-term infants gained 27-percent more weight than infants in the control group, even though they did not consume more calories. Their vagal activity peaked during the massage and remained higher than baseline through the 15-minute post-stimulation period.

The moderate-massage-therapy group also exhibited 21-percent greater weight gain than the sham massage group. This latter group did not exhibit a significant change in vagal activity or gastric motility during the treatment or post-treatment phases of the study. "These moderate- versus light-pressure massage therapy findings suggest the involvement of pressure receptors and/or baro-receptors," the study authors noted.

"The change in vagal activity elicited by massage therapy was significantly related to weight gain during the 5-day treatment period. This suggests that neonates who demonstrated increased vagal activity during massage are more likely to benefit from massage therapy," they concluded.

—Source: Touch Research Institutes, Department of Paediatrics, University of Miami School of Medicine; and University of Miami/Jackson Memorial Hospital Neonatal Intensive Care Unit, in Miami, Florida. Authors: Miguel A. Diego, M.A., Ph.D.; Tiffany Field, O.T.R., M.S., Ph.D.; and Maria Hernandez-Reif, M.S., Ph.D. Originally published in the Journal of Paediatrics, July 2005, Vol. 147, Issue 1, pp. 50-55.

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