SWADDLE BLANKET USE IN PREMATURE INFANTS IN THE NEONATAL INTENSIVE CARE UNIT

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BACKGROUND

- Gastroesophageal reflux (GERD) has been reported in up to 85% of all infants born prematurely, and it has been associated with a wide range of symptoms.
- These symptoms range in severity from irritability and discomfort to chronic lung disease and delayed growth and development.
A recent study (Pediatrics 2010 January;125(1): 96-104) involved an online survey of board-certified neonatologists, pediatric pulmonologists, and pediatric gastroenterologists regarding their beliefs pertaining to the symptoms, diagnosis, and treatment of GERD in premature infants in the neonatal intensive care unit (NICU), based on both their clinical impression and interpretation of the literature.
The study concluded that there is wide variation among pediatric subspecialists regarding the use of antireflux medications for the treatment of GERD in premature infants.

Pulmonologists were most likely to report that respiratory symptoms are caused by GERD ($p<0.001$), while neonatologists were least likely to report that a therapeutic trial of pharmacologic agents would be useful for diagnosing GERD ($p<0.001$).

A standard of care for these patients is needed.
A novel approach to the management of GERD in infants is the use of an abdominal band, applying gentle pressure, and possibly reducing the reflux of acid from the stomach.

This approach was evaluated in the NICU population to see if any improvement in clinical symptoms occurred.
The aim of this study was to evaluate the effect of gentle pressure provided by an abdominal band within a swaddling blanket on infant behaviors and physiologic changes in premature infants in a neonatal intensive care setting.
RESEARCH METHODOLOGY

• This research was conducted in the Neonatal Intensive Care Unit (NICU) at The Valley Hospital in Ridgewood, NJ from 1/2010-12/2011

• Study approval was obtained from The Valley Hospital IRB prior to initiation

• Written consent from parents was obtained for all infants enrolled
METHODOLOGY - 2

• All infants were in the NICU at time of enrollment and throughout the study
• Infants had to have cardiorespiratory stability and had to be taking full feedings by nipple to be eligible for enrollment
• All infants weighed at least 4 lbs. at study entry
• Each infant served as his/her own control, spending 6 hours in the blanket, and 6 hours out of the blanket (in isolette), with the schedule assigned randomly
• Vital signs were obtained as per NICU nursing protocol throughout study
• Data was gathered from questionnaires completed by the NICU nurse assigned to care for the baby for a 12 hour shift
STUDY POPULATION

• Mean gestational age of **29 weeks** (range of 26-34 weeks)
• Mean birth weight of **1491 grams** (range of 577-2104 grams)
• Mean age at time of study of **33 days** (range of 10-91 days)
• 53% of the infants enrolled were males
• 80% were Caucasians, with the remaining 20% equally divided among African-Americans, Hispanics, and Asians
Snooze Wrap Preemie Swaddle Blanket

- Preemie-sized version of Snooze Wrap Plus Swaddle Blanket
- Comfortable cotton flannel material with low-profile velcro fasteners
- Will be modified with an opening to allow for monitoring connections
Abdominal “Comfort Wraps”

• Help maintain proper positioning in blanket

• Provides a gentle pressure to help soothe troubled tummies
Integrated Positioning Pillow

• Pillow helps position infant correctly in blanket

• Combination of pillow and wraps addresses midline positioning

• Designed for prevention of torticollis
RESULTS

• 100 questionnaires were distributed, and 87 were returned.
• NICU nurse responses to eleven questions regarding the swaddle blanket compared to control setting were summarized, and presented as frequency of the response and percentages in the following slides.
How useful was this blanket?

96.6% Usefulness Rating
52.9% Rated VERY Useful
How comfortable did the baby appear to be in the blanket?

- 97.7% Babies Were Comfortable
- 67.4% Babies Were VERY Comfortable
Is the blanket easy to use with the baby?

98.8%
Blanket is Easy to Use With Baby
What is your comfort level in using this blanket?

- Comfortable: 22
- Very Comfortable: 65

100% Nurses Comfortable Using Blanket

74.7% Nurses VERY Comfortable Using Blanket
Did the blanket keep the baby securely on his/her back?

- No: 8
- Yes: 49

85.9% Kept Baby Securely on Back
How does the Swaddle Blanket compare to using a regular blanket?

79.3% Easier to Use Than Regular Blanket
Do you feel the baby is less irritable when placed in the blanket?

- Somewhat Irritable: 17
- Not Irritable: 70

80.5% Not Irritable In Blanket
Did you notice less spitting up after feedings when the baby was in the blanket?

65.5% Less Frequent Regurgitation
Did you notice fewer episodes of breathing pauses (apnea), heart rate slows (bradycardia), or oxygen falls (desaturations) while using the blanket?

73.3% Fewer Episodes of Apnea, Bradycardia or Desaturations
Did the baby spend more time sleeping when in the blanket?

- Yes: 58
- No: 28

67.4% More Time Sleeping When in Blanket
Did the baby spend less time crying when in the blanket?

64.7% Less Time Crying When in Blanket
• NICU nurses reported utility, comfort, and ease of use with a swaddle blanket for preterm infants.
• They also noted improvements in irritability, regurgitation, apnea, bradycardia, and oxygen desaturations when using the swaddle blanket.
• More time was reportedly spent sleeping soundly when preterm infants were in the swaddle blanket.
SPECULATIONS

• The presence of an abdominal band providing gentle pressure may prove helpful for the symptoms of GERD in preterm infants, and this could potentially limit the need for antireflux medications in this population.
FURTHER STUDIES

- 24 hour continuous pH monitoring, comparing time spent in the swaddle blanket and pH recordings with time not swaddled would allow objective confirmation of esophageal pH changes.
- Midline positioning of preterm infants in the blanket and a potential reduction in torticollis needs evaluation.
- Long term changes in sleep improvement in preterm infants and the implication for improvements in growth and development needs further study.
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