探討極低出生體重早產兒對疼痛反應之縱貫式研究

Longitudinal study of Pain Response in Very Low Birth Weight Neonates

中文摘要

本研究旨在探討極低出生體重早產兒對急性疼痛刺激過程的生理和行為反應是否隨著出生後的年齡增長而有所變化。本研究採前瞻性縱貫式研究設計，以立意取樣選取某一醫學中心之新生兒加護病房之懷孕週數 26 - 32 週、出生體重 772 至 1500 公克的早產兒為對象，收集 20 位有效樣本，以靜脈導管留置穿刺過程為疼痛刺激方法，於出生後第一、二、三週各收集一次資料。
研究工具以生理監視器收集疼痛刺激時的生理反應，包括心跳速率、呼吸速率及血氧飽和濃度，以數位錄影機全程錄影疼痛刺激時的行為反應包括臉部表情的眉頭皺起、眼睛緊閉、鼻唇間皺褶等，並以早產兒疼痛評估量表（Premature Infant Pain Profile, PIPP）測量疼痛程度。
研究結果發現每一週次的穿刺期、消毒期的心跳速率和呼吸速率皆高於基準期，血氧飽和濃度在穿刺期低於基準期，臉部表情方面穿刺期以眼睛緊閉呈現比率最多，眉頭皺起次之。早產兒遭受靜脈導管留置穿刺期，顯示最大心跳速率和最低血氧飽和濃度隨著出生週次增加並無一致的變化，最大呼吸速率隨著出生週次增加有逐漸降低趨勢，臉部表情的眉頭皺起和眼睛緊閉都隨著出生週次增加有逐漸增加的趨勢。進一步經控制疾病嚴重度後，以重複測量變異數檢定其差異，結果最大心跳速率、最低血氧飽和濃度、最大呼吸速率和臉部表情都未達顯著差異，表示出生後週齡增長在生理與行為反應之變化並無顯著差異。
本研究結果可提供臨床護理人員照護極低出生體重兒疼痛評估之依據，以提昇早產兒的護理照護品質。

英文摘要

The objective of the study was to explore the pain response in very low birth weight neonates. The method of a prospective longitudinal study design was adopted. Twenty premature infants with gestational age (GA) between 26 to 32 weeks and birth body weight between 772 to 1500 grams were enrolled in the study. Data were collected on premature neonates during venous catheter insertion once a week at the first, second, and third week of postnatal age. Cardiopulmonary monitor was used to record physiology parameters including heart rate, respiratory rate, and oxygen saturation. Video tapping was used to observe the behavioral pain response and PIPP (premature infant pain profile) was used to quantify the magnitude of pain. All data were analyzed according to the four phase of catheter insertion: baseline phase, sterilization phase, puncture phase, and recovery phase.

Heart rate and respiratory rate at sterilization and puncture phases were higher than the baseline phase at all three weeks. Oxygen saturation at the puncture phase was lower than the baseline phase at all three weeks. Facial expression with eye squeeze was most frequently observed in the puncture phase, followed by the brow bulge.

No consistent changes were noted on maximal heart rate or minimal oxygen saturation with greater GA. Facial expression with episodes of eye squeeze or brow bulge increased with their GA. However, after controlling the severity of their disease status, no significant differences were noted among maximal heart rate, minimum oxygen saturation, maximum respiratory rate, or facial expression with repeated measures analysis of variance. These results could signify that postnatal age of the first three weeks places no effects on the physiologic or behavior responses of VLBW infants to pain.

The result of this study can be used as a clinical guide for nurses taking care of very low birth weight neonates for the advancement of the quality of nursing care.