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## CLINICAL ARTICLES

## Breastfeeding: a potential protective factor against ventriculoperitoneal shunt infection in young infants

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## Abstract

## OBJECT

Previous studies have shown nutritional benefits of breastfeeding for a child's health, especially for protection against infection. Protective factors in human milk locally and systemically prevent infections in the gastrointestinal as well as upper and lower respiratory tracts. It remains unclear whether breastfeeding protects infants against ventriculoperitoneal (VP) shunt infection.

## METHODS

A cohort study was conducted from December 2003 to December 2006 at Children's Hospital Medical Center in Tehran, Iran. A total of 127 infants with hydrocephalus who were treated using a VP shunt in the first 6 months of life were enrolled. Each infant's breastfeeding method was classified as either exclusively breastfed (EBF), combination feedings of breast milk and formula (CFBF), or exclusively formula-fed (EFF). Infants were followed up to determine the occurrence of shunt infection within 6 months after operation. Statistical analysis was performed using survival methods.

## RESULTS

Infants ranged in age from 4 to 170 days at the time of shunt insertion (mean 69.6 days), and 57% were males. Regarding the breastfeeding categories, 57.5% were EBF, 25.2% were CFBF, and 17.3% were EFF. During the follow-up, shunt infection occurred in 16 patients, within 15 to 173 days after shunt surgery (median 49 days). The 6-month risk of shunt infection was 8.5% (95% confidence interval [CI] 4–18%) in the EBF group, 16.5% (95% CI 7–35%) in the CFBF group, and 26.0% (95% CI 12–52%) in the EFF group. There was no statistically significant difference between these 3 groups ( $p = 0.11$ ). The trend test showed a significant trend between the extent of breastfeeding and the risk of shunt infection ( $p = 0.035$ ), which persisted even after adjustment for potential confounding variables (hazard ratio = 2.01, 95% CI 1.01–4).

## CONCLUSIONS

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This study supports the protective effect of breastfeeding against shunt infection during the first 6 months of life and the presence of a dose-response relationship, such that the higher the proportion of an infant's feeding that comes from human milk, the lower the incidence of shunt infection. Encouraging mothers of infants with VP shunts to breastfeed exclusively in the first 6 months of life is recommended.

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