

Cot death and prone sleeping position in The Netherlands

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The incidence of cot death and related causes of death has increased in The Netherlands from 0.46 death per 1000 live births in 1969-71 to an average of 1.31 since 1978. Changes in the classification of the cause of death are insufficient to explain this increase,¹ increased survival of preterm babies can account for at most 5% of the rise, and maternal smoking decreased during this period. Since 1971 the Dutch medical and popular press has advocated a prone sleeping position rather than the traditional lateral or supine position for infants. We conducted a case-control study to find whether sleeping position is a determinant of cot death.

Subjects, methods, and results

Parents of 142 infants who died from the sudden infant death syndrome were asked the usual sleeping position of their child in his or her last weeks, the position in which the child was last placed and was found, and, to reduce bias by concealing the main purpose of the study, about parental smoking and breast feeding. All parents recalled the sleeping habits. Only infants aged 1 month to 1 year were included (median 3.4 months); they had been born during 1980-6, and 81 (57%) were male. The distribution of age at time of death was typical of cot death, and necropsy had been performed in 90 cases (63%).

To obtain an unmatched reference group a consecutive series of parents in 17 well baby and preschool clinics were asked the preferred sleeping positions of their child at age of 2-4 and 5-7 months, along with questions concerning birth weight, breast feeding, and parental smoking. Information was received on 320 infants born during 1982-7, 39 of whom were aged <4 months. To provide matched controls 109 of the bereaved parents were asked to complete a questionnaire on one to five children in their immediate surroundings who had been born within nine months of their child and were preferably of the same sex. They asked the questions put to the unmatched group and

the preferred sleeping positions of the children when at the age of their own infant when he or she died. In all, 71 of the parents participated, providing 299 matched controls. After children with a birth weight <2500 g had been excluded from the matched controls 62 infants who died were matched with 254 infants of the same age and sex.

Infants in the reference and control groups were divided into those who had and those who had not slept prone. Analysis was by the Mantel-Haenszel method with stratification according to birth weight and maternal smoking (unmatched data) and with each stratum consisting of one case and its matched controls (matched data); the table gives the results.

Comment

Although 88% of the infants who died were found prone, we consider this less relevant than the position in which the infant was last placed, especially as in the first six months of life an infant's position is generally decided by his or her attendant. Furthermore, it is uncertain whether an infant was in a particular position long before death or turned during an agonal struggle. The incidence of cot death was almost five times higher among infants who usually slept prone than among those who did not. About 15% of the infants who did not undergo necropsy probably did not die from the sudden infant death syndrome,² resulting in underestimation of a possible association.

A major potential confounder is prematurity, which increases the risk of cot death; yet a prone sleeping position is recommended in neonatal units. The relative risk, however, remained high after correction for birth weight. As the estimated relative risks were determined mostly from infants with a normal birth weight our results may not apply to premature infants.

Though most babies who sleep prone do not succumb to cot death, and not sleeping prone does not guarantee that it will not occur, in our study the relative risk was significantly increased after correction for prematurity, age, socioeconomic class, and local traditions. Others have found similar associations.³ There seems no reason to prefer a prone position unless an infant is a preterm neonate⁴ or has, for example, clinically important gastro-oesophageal reflux,⁵ the Pierre Robin syndrome, or infant scoliosis. We advise a lateral or supine sleeping position for infants unless medical conditions dictate otherwise.

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Prone sleeping position in infants who died of cot death compared with surviving infants at similar age

	No (%) of infants placed prone	Relative risk (95% confidence interval)	χ^2	p Value
<i>Unmatched subjects</i>				
Reference group (n=320)	197 (62)			
Infants who died (n=142):				
Last placed prone	120 (85)	3.2 (2.0 to 5.4)	20.7	p<<0.001
Usually placed prone*	122 (87)	4.1 (2.4 to 7.1)	26.8	p<<0.001
<i>Matched subjects</i>				
Reference group (n=254)	149 (59)			
Infants who died (n=62):				
Last placed prone	54 (87)	4.9 (2.3 to 10.3)	17.2	p<<0.001
Usually placed prone	57 (92)	9.3 (3.8 to 22.8)	24.1	p<<0.001

*Data missing for one infant.

- 1 Baak JPA, Huber J. Incidence of SIDS in the Netherlands. In: Robinson RR, ed. *Proceedings of the Francis E. Camps international symposium on sudden and unexpected deaths in infancy*. Toronto: Canadian Foundation for the Study of Infant Death, 1974:157-67.
- 2 Valdes-Dapeña MA. Sudden and unexpected death in infancy: a review of the world literature 1954-1966. *Pediatrics* 1967;39:123-38.
- 3 Beal S. Sleeping position and SIDS. *Lancet* 1988;ii:512.
- 4 Anonymous. Prone or supine for preterm babies? *Lancet* 1988;ii:688.
- 5 Vandenplas Y, Sacré-Smit L. Gastroesophageal reflux in infants, evacuation of treatment by extended pH monitoring. *Eur J Pediatr* 1987;146:504-7.

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