P = 0.017) and was highest for infants found supine. Unconditional analysis showed that quilt use attenuated the protective effect of sleeping supine compared with sleeping on the side (common odds ratio test, P = 0.03).

Comment

Our data show that the use of a quilt increases the risk of the sudden infant death syndrome particularly among older infants who sleep supine or on their side; this is related to obstruction of the face by the quilt for some infants. At 16 weeks infants are able to pull clothing over their face.[3] Infants >3 months old who sleep on their back or their side may be particularly likely to pull loose bedding over their faces; infants sleeping prone are less likely to be able to do this. The risk of the sudden infant death syndrome when a quilt is used (odds ratio 2.82; 1.95 to 4.08) is reduced after adjustment for factors that include the intermediate state of infants being found with their head under the covers.[4] Duvets and quilts often do not tuck in because of their design.[5] The recommendation that quilts should not be used in babies <1 year old is important for those who sleep supine or on their side.[3]

We thank the parents and infants who participated in this study; the professional officers of the Tasmanian Ambulance Service for collecting data at the scene of death; the Departments of Hospital Pathology, Police, and Justice for their cooperation; Ego Pharmaceuticals for providing presents for control families after the home interview.

Contributors: A-L P initiated the study, designed the protocol, coordinated the collection of data, and undertook the statistical analysis, and participated in writing the paper. TD participated in the design of the study, was involved in the analysis and interpretation of data, and participated in writing the paper. DC participated in the statistical analysis and interpretation of data, and contributed to the writing of the paper. JC coordinated the fieldwork, data documentation, and quality control; participated in interpreting the data; and contributed to the writing of the paper. Allan Carmichael provided paediatric advice. John Williams provided computing advice. Helen Bain, Shirley Cameron, and Dianne McCracken were the principal research interviewers for collection of data. Janelle Booth prepared the manuscript for publication and participated in the literature search. A-L P is guarantor for the paper.

Funding: Tasmanian State Government, Australian Rotary Health Research Fund, National Health and Medical Research Council, National SIDS Council of Australia and its constituent organisations including the Sudden Infant Death Research Foundation, and Tasmanian Sanatoria After-Care Association. A-LP holds a National Health and Medical Research Council public health research and development fellowship.

Conflict of interest: None.

1 Ponsonby AL, Dwyer T, Gibbons LE, Cochrane JA, Wang YG. Factors potentiating the risk of sudden infant death syndrome associated with the prone position. *N Engl J Med* 1993;329:377-82.
2 Breslow NE, Day NE. *Statistical methods in cancer research.* Vol 1. Lyons: International Agency for Research on Cancer, 1980:196-279.
3 Illingsworth RS. *The normal child: some problems of the early years and their treatment.* 8th ed. London: Churchill Livingstone, 1983:16.
4 Fleming PJ, Blair PS, Bacon C, Bensley D, Smith I, Taylor E, et al. Environment of infants during sleep and risk of the sudden infant death syndrome: results of 1993-5 case-control study for confidential inquiry into stillbirths and deaths in infancy. *BMJ* 1996;313:191-5.
5 Wilson CA, Laing RM, Williams SM, Mitchell EA. Clothing and bedding and its relevance to sudden infant death syndrome: further results from the New Zealand cot death study. *J Paediatr Child Health* 1994;30:506-12.

(Accepted 11 June 1997)

Exposure to measles in utero and Crohn's disease: Danish register study

Lise Lotte W Nielsen, Nete Munk Nielsen, Mads Melbye, Morten Sodermann, Marianne Jacobsen, Peter Aaby

See editorial by Metcalf

Department of Epidemiology Research, Danish Epidemiology Science Centre, Statens Serum Institut, DK-2300 Copenhagen, Denmark

Lise Lotte W Nielsen, *medical student*

Nete Munk Nielsen, *physician*

Mads Melbye, *professor*

Peter Aaby, *professor*

continued over

BMJ 1998;316:196–7

It has been suggested that people exposed to measles in utero may be at high risk of developing Crohn's disease in adulthood.[1 2] Swedish investigators have reported an increased incidence of Crohn's disease in individuals born shortly after a measles epidemic,[3] and they later described four pregnant women with measles, three of whose offspring developed Crohn's disease as adults.[4]

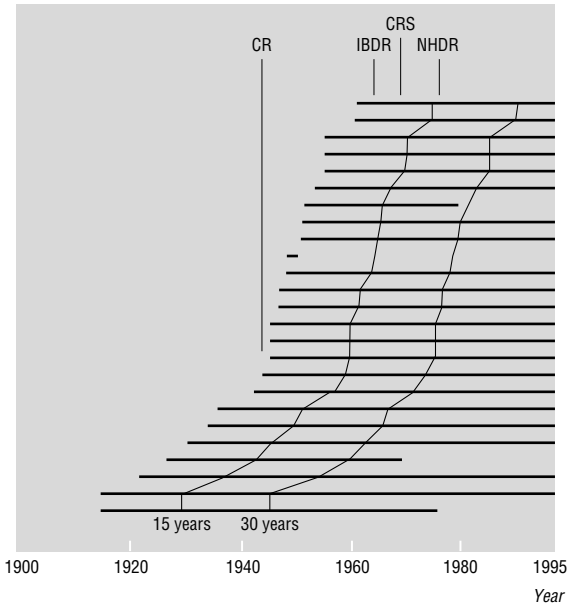
Subjects, methods, and results

To test this surprisingly strong association we conducted a record linkage study in Denmark. Hospital records from the Blegdamshospital (until 1976 the main hospital for treatment of infectious diseases in Copenhagen county) for 1915-66 were screened to identify pregnant women aged 15-43 years with measles. Their children were identified through the Copenhagen civil register (or church registers for those born before 1923) and linked through their civil registration system numbers with the national hospital discharge, cancer, and inflammatory bowel disease registries. Offspring who died before 31 December 1995 were identified through death certificates. For those with a gastrointestinal diagnosis, we contacted the patient's doctor for more information.

We identified 472 women aged 15 to 43 years who had been admitted with measles. Thirty three were pregnant: 11 developed measles during the first trimester, 9 during the second, 6 during the third, and 9 had exanthema less than 14 days after delivery. All but three women were identified in the civil registers. Four first trimester pregnancies were never registered and one child could not be found in any register.

Of the 26 offspring identified (including one set of twins), four died, one in infancy. The diagnoses of the other three, who died as adults, did not suggest inflammatory bowel disease (drug addiction, lung cancer, and heart disease). Among individuals still alive (median age 51.4 (36-79) years) none were registered as having Crohn's disease in either the inflammatory bowel

BMJ: first published as 10.1136/bmj.316.7126.196 on 17 January 1998. Downloaded from http://www.bmj.com/ on 18 April 2024 by guest. Protected by copyright.



Follow up of subjects exposed to measles in utero. Each line represents subjects followed from birth until 1995 or death. The age interval 15-30 years (within which the incidence of inflammatory bowel disease peaks) is shown. Year that registers were established is also indicated (CR=cancer register, IBDR=inflammatory bowel disease register, CRS=civil registration system, NHDR=national hospital discharge register)

disease register for Copenhagen or the national hospital discharge register. Three had gastrointestinal diagnoses: colon cancer 51 years ago at age 28, benign rectal neoplasm 8 years ago at age 44, and proctitis haemorrhagica 19 years ago at age 21. These patients' general practitioners confirmed that none had developed inflammatory bowel disease.

Comment

We identified the offspring of 25 women who had had measles during pregnancy and found no association between exposure to measles and Crohn's disease. Based on a binomial distribution, the upper 95% confidence limit of our observed zero cases was 2.8 cases, which is far from the 18.8 cases expected (3/4 × 25 exposed) from the report by Ekbom et al.[4]

We are confident about the diagnoses made at the Blegdamshospital and the recording of the pregnancies. We cannot exclude the possibility that other women treated for measles at the hospital were in fact pregnant. However, all the records contained information on last day of menstruation and if one period was missed we considered the woman possibly pregnant; according to the civil registers none of these women gave birth.

Subjects exposed to measles in utero were followed long past the age in which Crohn's disease peaks (fig). Even if they had developed Crohn's disease before 1977, when the discharge registry was established, Crohn's disease is a chronic disease which often results in admission so those affected would probably have appeared in the discharge register at some time after this date. Proctitis haemorrhagica and colon cancer could both be associated with ulcerative colitis, but the patients admitted several times to hospital were never treated for colitis or an associated problem.

We have no clear explanation for the discrepancy between our results and those of Ekbom et al. However, our findings agree with those of Jones et al,[5] who followed the offspring of 47 women with measles in pregnancy; none of their offspring developed Crohn's disease after an average follow up of 33 years. Measles infection in their study was self reported or diagnosed by a general practitioner and was presumably less severe than in our group of hospitalised women. In conclusion, exposure to measles in utero does not seem to be strongly associated with the development of Crohn's disease later in life.

Institute of Epidemiology and Social Medicine, Danish Epidemiology Science Centre, Aarhus, Denmark
Morten Sodermann, *physician*
Marianne Jacobsen, *physician*

We thank the staff at the registries, particularly those at the Copenhagen City Archives; Vibeke Binder at the Inflammatory Bowel Disease Register; Sonja Lerby at the Civil Registration System Register; and the staff at the Danish Cancer Registry.

Contributors: The study design and protocol was formulated by PA, NMN, MM, and MS. MS, MJ, LLWN, and NMN screened the hospital records. LLWN, NMN, and MM conducted the linkage studies; together with PA, they also carried out the analysis. The paper was drafted by LLWN and NMN, and all the authors contributed to the final version. NMN is the guarantor.

Funding: P Carl Petersens Foundation and the Danish National Research Foundation.

Conflict of interest: None.

1 Wakefield AJ, Pittilo RM, Sim R, Cosby SL, Stephenson JR, Dhillon AP, et al. Evidence of persistent measles infection in Crohn's disease. *J Med Virol* 1993;39:345-3.
2 Wakefield AJ, Ekbom A, Dhillon AP, Pittilo RM, Pounder RE. Crohn's disease: pathogenesis and persistent measles virus infection. *Gastroenterology* 1995;108:911-6.
3 Ekbom A, Wakefield AJ, Zack M, Adami HO. Perinatal measles infection and subsequent Crohn's disease. *Lancet* 1994;344:508-10.
4 Ekbom A, Daszak PS, Kraaz W, Wakefield AJ. Crohn's disease after in-utero measles virus exposure. *Lancet* 1996;348:515-7.
5 Jones P, Fine P, Picacha S. Crohn's disease and measles. *Lancet* 1997;346:473.

(Accepted 3 October 1997)

A memorable patient

The wrong glasses

Darned if I could remember where I had left my glasses, but I carefully retraced my footsteps of the day before. Sure enough, in the gentlemen's rest room near my office, there was a note above the wash basin: "If you left a pair of glasses here I gave them to the head nurse of the intensive care unit for safe keeping." I hurried to the unit, eager to regain my eyesight. No, they were not in the lost property cupboard. I whined loudly of my lost spectacles, and was overheard by a staff nurse, who asked if they were an old, battered, horn rimmed pair. "Yes, yes," I responded. "Oh, I thought they were his," she informed me, pointing to an elderly comatose patient nearby. He lay there, my spectacles compassionately balanced on his nose, oblivious to his surroundings. I went over and carefully removed them, returning them to their owner. I guess he had looked more alert with spectacles in place.

Hillary Don, *professor of anaesthesiology, San Francisco*

BMJ: first published as 10.1136/bmj.316.7126.196 on 17 January 1998. Downloaded from http://www.bmj.com/ on 18 April 2024 by guest. Protected by copyright.