CD Summary

December 22, 1999
Vol. 48, No. 26

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CENTER FOR DISEASE PREVENTION & EPIDEMIOLOGY • OREGON HEALTH DIVISION

PYLORIC STENOSIS IN INFANTS FOLLOWING ERYTHROMYCIN PROPHYLAXIS

In February 1999, pertussis was diagnosed in six neonates born at hospital A in Knoxville, Tennessee. Because a health-care worker was the most likely source of exposure, erythromycin was prescribed prophylactically for some 200 infants born at the hospital during February 1-24, 1999. In March, local pediatric surgeons noticed an increased number of cases of infantile hypertrophic pyloric stenosis (IHPS) in the area, with seven cases occurring during a 2-week period. All seven had been born in hospital A during February and had been given oral erythromycin. The Tennessee Department of Health and CDC investigated the cluster and its possible association with use of erythromycin. This report summarizes their investigation, which insinuates a causal role for erythromycin in this cluster of IHPS cases.[1]

IHPS is a hypertrophy of the pyloric muscle that usually results in nonbilious, projectile vomiting—typically beginning at 3–4 weeks of age.[2] IHPS affects approximately 1–3/1000 live-born infants, with male babies 4–5 times more susceptible.[3,4] The pyloric muscle hypertrophy of IHPS develops postnatally.[5] Reports of a possible association between IHPS and erythromycin were published in 1976,[6] but the association was considered improbable and was never confirmed.* The only subsequent report of this association was a single case report of IHPS in a breastfed infant whose mother had taken erythromycin.[7]

CASE REVIEW

IHPS cases occurring during 1997-1999 were ascertained by reviewing medical records in the two area hospitals that provide IHPS treatment. IHPS was defined as a hospital diagnosis of pyloric stenosis (ICD9 code 750.5) that required pyloromyotomy in an infant born in one of the six birthing facilities in the region during 1997-1999. The incidence of IHPS among infants born at hospital A peaked during February 1999 with seven IHPS cases among 217 live-born infants (rate: 32.3 cases per 1000 live-born infants), a rate that was nearly seven times higher than during 1997-1998 (relative risk=6.8; 95% confidence interval [CI]=3.0-15.7). No additional IHPS cases were reported among infants born during March-May 1999 at hospital A, and the risk for IHPS in the region returned to the background rates following the peak in February 1999.

A chart review of IHPS cases from January 1998 through March 1999 was conducted at the two hospitals in the region that had pediatric surgery services. The seven index cases were similar to 40 historical cases in most regards. Compared with historical cases, index cases were younger at the time of admission for IHPS (mean, 26 vs. 35 days) and were less likely to have a family history of IHPS (0% versus 17.5%). The mean pyloric thickness and length were similar in the two groups. All index cases had received oral erythromycin, compared with none of the historical cases.

COHORT STUDY

A retrospective cohort study of 282 infants born during January-February 1999 at hospital A was conducted to assess a possible association between erythromycin use, gastrointestinal symptoms, and IHPS. In the cohort, 157 infants (55.7%) had a history of oral erythromycin use. The prevalence of erythromycin use was 8.6% among 116 infants born during January 1999 and 88.6% among 166 infants born during February 1999. The erythromycin preparations administered to the infants included ethyl succinate (n=83), estolate (n=59), both (n=1), and 14 unspecified. No differences were observed in GI symptoms or risk for IHPS in relation to the preparation used.

The infants who were given erythromycin but who did not develop IHPS were 1-53 days old when they began treatment (median age=13 days; mean=14.1 days), and the duration of erythromycin exposure ranged from 1 to 21 days (median, 14 days; mean, 12.2 days). The seven index IHPS cases were 2-17 days old when they began erythromycin (median=5 days; mean=9.3 days), and the duration of their erythromycin exposure ranged from 10-18 days (median, 14 days; mean, 13.3 days). Seven IHPS cases occurred among infants who were exposed to erythromycin and none among infants not exposed to erythromycin (95% CI for relative risk 1.7–∞).

Peak IHPS incidence in the Knoxville area corresponded temporally with the use of erythromycin following the county health department recommendation. All index cases began having symptoms of either vomiting or excessive irritability while taking erythromycin.

CONCLUSIONS

Although this study was not population-based, it did include all infants born alive in Knoxville-area hospitals. No evidence indicated a change in case definition, in referral patterns, or in pediatric surgeons or pediatric radiologists that could explain the increased rate as an artifact. Previous epidemiologic studies of IHPS have not identified erythromycin as a risk factor, possibly because few of the neonates included were exposed to erythromycin. In most mass prophylaxis situations, the number of neonates treated would be small, possibly explaining why an increased risk for IHPS with erythromycin had not been established.

These findings suggest that erythromycin has a causal role in the etiology of IHPS and raise concerns about the use of erythromycin in neonates. The prevention of pertussis in infants is important too, however; most hospitalizations for and deaths from pertussis occur in children aged less than 1 year.[9] No data confirm a safe and effective alternative to erythromycin for prophylaxis of neonates exposed to pertussis.[10] Public health officials should continue to use caution in defining risk groups to minimize unnecessary prophylaxis. Physicians who prescribe erythromycin to newborns should inform parents about the possible risks for IHPS and counsel them about signs of developing IHPS.

* Ah, sweet vindication.

The **CD Summary** (ISSN 0744-7035) is published biweekly, free of charge, by the Oregon Health Division, (Dept. of Human Services).
800 NE Oregon St., Portland, Oregon 97232
Periodicals postage paid at Portland, Oregon.
Postmaster—send address changes to:
CD Summary, 800 NE Oregon St., Suite 730, Portland, OR 97232

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December 22, 1999
Vol. 48, No. 26

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Cases of pyloric stenosis following use of oral erythromycin should be reported to the FDA MedWatch (800/332-1088 or via *http://www.fda.gov/medwatch*. Additional information on use of erythromycin for treatment of ophthalmia neonatorum and infant pneumonia caused by *Chlamydia trachomatis* in newborns is available at *http://www.cdc.gov/nchstp/dstd/eryth.htm* or by fax (800/332-0178).

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This article was abridged from: CDC. Hypertrophic pyloric stenosis in infants following pertussis prophylaxis with erythromycin -- Knoxville, Tennessee, 1999. *MMWR 1999;48:1117-1120 (December 17)—itself largely derived from reference 1.*

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Dust Mite Control Products and Acute Asthma Reactions

THE EPA and the National Pesticide Telecommunications Network have received several reports of acute adverse health events associated with use of products marketed for dust mite control in carpet and upholstery. These effects have been reported among asthmatics and other allergy sufferers.

In one report, an adult female* applied a dust mite spray to the carpets and upholstery in her home. An extremely strong odor developed almost immediately, becoming more intense after the carpet was vacuumed per the product's label instructions. She complained of nasal and throat irritation during and shortly after the application. The following morning, the woman's husband developed an acute asthma exacerbation, followed by another attack two days later. Their three year old daughter developed an itching, erythematous, diffuse body rash within 15 minutes of entering the home on the day of application. The rash persisted for several days. After professional steam cleaning, the odor returned and was more intense.

Signs and symptoms in other cases include periorbital edema, conjunctival redness, painful and swollen lips, hives, burning skin, and shortness of breath. An extremely strong odor, which increases following steam cleaning, is also reported in some of the cases.

The Health Division requests that clinicians notify us of skin reactions, adverse respiratory effects, or severe allergic-type reactions that may be associated with exposure to such products. For more information or to report possible cases, contact Marilyn Scott (503/ 731-4025).

* human, not dust mite.

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