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Epidemiologic Notes and Reports

Occupational Exposure to Synthetic Estrogens — Puerto Rico

Following complaints of breast enlargement in male employees and menstrual disorders in the female employees of an oral contraceptive plant in Puerto Rico, an investigation was initiated in May 1976. It revealed that during the previous 12 months, 5 of the company's 25 male employees (20%) and 12 of its 30 females (40%) had experienced symptoms or signs compatible with increased absorption of estrogens.

All 55 employees were questioned; 53 agreed to be examined. Plasma samples were drawn for ethinyl estradiol determination and environmental air samples obtained for measurement of estrogen and progestogen concentrations. Hyperestrogenism in males was defined as clinical gynecomastia or a history of gynecomastia with or without decreased libido and increased areolar pigmentation in an employee since he had begun work at the factory; a female case was defined as intermenstrual bleeding (at least 1 episode of vaginal bleeding other than menstruation) in a woman since she had started work at the factory. Five cases of hyperestrogenism were found in the 5 males who came into contact with the powdered hormones used to make the contraceptive tablets. Three had clinical gynecomastia at the time of the examination. Cases were also diagnosed in 2 (40%) of the women who came in contact with the powdered product; 55% of the production line operators gave similar menstrual histories. No cases were identified in the clerical staff.

In view of the subjective nature of the data obtained from the 30 women employees, 60 matched nonfactory controls were selected for menstrual histories for the same time period. The factory workers (non-clerical) had an estimated 4-fold increased risk of menstrual disorders compared with matched controls.

Environmental measurement of air showed a wide variation in the concentrations of estrogen and progestogen. No definitive statement can be made concerning the values, however, as the method of measurement is a new one, and no occupational air standards exist for these hormones. The plasma ethinyl estradiol levels were elevated* in 60% of the persons handling the powdered product; the prevalence of elevated levels among all factory workers was 32%. Nevertheless, the short *in vivo* half life of synthetic estrogen (1 to 2 hours) and the absence of accurate information on the time of the venipuncture relative to occupational exposure or oral contraceptive ingestion precludes further analysis.

Measures to control dust in the plant were considered good. The highest risk groups were provided with air-supplied vinyl suits. The company had taken considerable efforts to minimize dust evolution, and the workers appeared to be adhering to regulations.

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Editorial Note: This appears to be the first published report of occupational hyperestrogenism caused by oral contraceptives, although isolated reports exist of gynecomastia associated with diethylstilbestrol production (*2,3*).

The company involved in this study was exemplary in its efforts to control dust in its plant. The fact that clinical illness nevertheless occurred suggests that new techniques may be needed to contain these chemicals, such as total enclosure of the product throughout its formulation. There is also a need to establish occupational health standards for estrogens in air.

References

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2. Pacynski A, Budzynska A, Przyleck S, Rosaczynski J: Hyperestrogenism in a pharmaceutical factory. Endrokrinol Pol (Warsawa) 22:149-154, 1971
3. National Institute for Occupational Safety and Health: Health Hazards Evaluation Report (71-9). Cincinnati, NIOSH, 1973

* Plasma ethinyl estradiol is considered elevated if it exceeds 30 pg/ml for all men and for women not currently using oral contraceptives, or 150 pg/ml for women currently using low dose estrogen oral contraceptives (*1*).

Follow-up on Meningococcal Disease — Alaska, Oregon, Washington

Alaska: Two confirmed and 1 suspect case of serogroup A meningococcal disease occurred in December 1976 and January 1977 in frequenters of a skid-row-like area of Fairbanks; all 3 were heavy users of alcohol. The area is inhabited by approximately 150 people but is frequented by many more. The Fairbanks Health Center and the Alaska Department of Health and Social Services began inoculating residents of this area with serogroup A meningococcal vaccine on February 14, 1977. To date, 90 persons have been inoculated.