Vitamin E and the Prevention of Retinopathy of Prematurity

In spite of numerous human and animal studies, the etiology of retinopathy of prematurity (previously called retrolental fibroplasia) remains obscure. Prevention attempts with judicious use and careful monitoring of supplemental oxygen, while decreasing the incidence, have not eradicated this complication of prematurity. Currently, retinopathy of prematurity is a condition that cannot be prevented in certain infants, especially those of very low birth weight.

One controlled trial suggested that the prophylactic oral administration of 100 mg/kg/d of free vitamin E to babies at highest risk, while not decreasing the incidence of retinopathy of prematurity, decreases the severity in affected infants. Three other controlled trials showed a lower incidence of severe retinopathy of prematurity in treated groups (25 mg/kg intramuscular or 25 mg/d oral, or variable intravenous doses), but none of these differences were statistically significant. These observations have led some authors to suggest that vitamin E be routinely administered to all infants weighing less than 1,500 g at birth.

It must be noted that any effective prophylaxis with vitamin E in the United States would require that 22,000 surviving infants of birth weight less than 1,500 g be treated annually to prevent approximately 2,000 infants from developing the cicatrical sequelae of retinopathy of prematurity. The treatment of 20,000 infants who would not develop retinopathy of prematurity would be acceptable if it were certain that the administration of vitamin E was completely safe or, at least, that the benefits of its use outweighed the risks by a substantial margin. Preliminary reports, however, suggest the possibility of complications associated with the administration of pharmacologic doses of vitamin E. Moreover, we lack fundamental knowledge about the pharmacology of vitamin E and its esters, including differences in the absorption and disposition of oral versus intramuscular versus intravenous administration, preservatives, and the vehicles required to solubilize the fatty vitamin. This is highlighted by findings in premature infants whose deaths were apparently associated with an intravenous acetate ester preparation of vitamin E.

Complications such as necrotizing enterocolitis and sepsis occur infrequently in the neonatal population. To date, studies that report no side effects lack sufficient sample size to appropriately evaluate a potential increase of such problems or to be sufficiently reassuring that unexpected complications of therapy are unlikely to occur. Studies currently in progress may clarify the risk-benefit ratio of pharmacologic doses of vitamin E. At this time, however, the Committee regards prophylactic use of pharmacologic vitamin E as experimental and cannot recommend that high doses of vitamin E be given routinely to infants weighing less than 1,500 g, even if such use is limited to infants who require supplemental oxygen.

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YES-NO SELF-EVALUATION QUIZ

1. Do you wish you could think of a commercial use for ear wax?
2. Do two-year old children scream and run the other way when you walk into a room?
3. Is your best tie stained with urine?
4. Does your wife (husband) keep telling you to return to a residency for allergy (dermatology, plastic surgery—pick one) training so you can “have a normal family life like other people”?
5. Does the smile or kiss of a 3 year old still melt you?
6. Does it thrill you when a child you’ve cared for since birth with many medical problems or a learning disability goes away to college and is successful there?
7. Do you feel you must have done something right if one of your “babies” marries and brings his (her) first born to you as a patient?

If you answered yes to all of the above, you are a pediatrician. How could you be anything else?

Submitted by Michael K. Levine, MD

316 VITAMIN E AND RETINOPATHY OF PREMATURENESS
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