Early Trial on the Prevention of Intracranial Hemorrhage in Premature Infants by Tocopherol (Vitamin E)

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In the 1950s, I undertook a study of the fragility of the small vessels of the skin in premature infants and its possible association with the incidence of intracranial hemorrhage (ICH). In using a "capillarodynamometer," a skin suction pump, it was shown that the vascular resistance was low in women during labor as well as in premature infants. Furthermore, there was a "suggested correlation" with ICH. The role of tocopherol in the skin of the guinea pig was subsequently tested, and the "antivascular fragility" of vitamin E demonstrated.

On supplementing women during premature labor with 300 μg DL-α-tocopherol in an injectable emulsion, two observations were made:

1. Elevation of vascular resistance in 50 premature controls
2. Lowered incidence of ICH, i.e., one case in 40 in the treated group, and six cases of 40 in the controls

My previous work has been taken up afresh by Dr. Chiswick using modern methods for the diagnosis of ICH (i.e., ultrasound through the fontanelle) on larger numbers of patients. This would suggest that the results might be confirmed.

When one knows that ICH is due to surging of the cerebral blood flow and that there is rupture of a vein (J. C. Larroche), it would seem unlikely that vitamin E alone could prevent ICH; however, it might help by virtue of the vitamin E deficiency.

In vitamin E deficiency, there is an increase of the number of peroxisomes in the brain. This finding should be explored, since peroxisomes are the sites of β-oxidation. The problem of ICH cannot be solved by vitamin E alone, any more than retrolental fibroplasia can be prevented by vitamin E.