

and cyanocobalamin for six months. Following cessation of treatment, vitamin intake was limited to three daily multivitamin capsules which had been given regularly for years.

One multivitamin capsule contains 5,000 μ vitamin A, 400 μ vitamin D, 75 mg vitamin C, 2 μ g B₁₂, 2 mg B₆, 2 mg B₂, 3 mg riboflavin, 20 mg nicotinamide, and 5 mg calcium pantothenate. Measures for control of pulmonary infection, including antimicrobial agents other than chloramphenicol, were continued essentially as before the optic neuritis.

In April 1965, it was felt imperative to reutilize chloramphenicol (40 mg/kg/24 hr). Three daily multivitamins were continued but no additional vitamins were prescribed. Visual signs and symptoms were carefully monitored. After a total dose of 47 gm chloramphenicol, visual acuity deteriorated to 20/70 in each eye, temporal disc margins elevated, and visual fields contracted. With the exception of accentuated temporal disc pallor, visual examination results returned to pre-chloramphenicol treatment levels when administration of this drug was stopped, and vitamins B₆ (150 mg/24 hr) and B₁₂ (150 μ g/24 hr) were added and continued regularly.

In September 1966, chloramphenicol therapy was restarted (80 mg/kg/24 hr dose reduced in mid-November 1966 to 40 mg/kg/24 hr), and dosage of vitamins B₆ and B₁₂ was simultaneously increased to 200 mg/24 hr and 200 μ g/24 hr, respectively. The three daily multivitamins and other treatment modalities were unchanged. Attempts to discontinue this drug therapy led only to decompensation unresponsive to any measure other than restarting of chloramphenicol.

As of July 14, 1967 the child has received a total dose of chloramphenicol in excess of 265 gm. Careful monitoring of visual acuity, fundus appearance, and visual fields have shown no deterioration. Interestingly, visual acuity has improved to 20/30 in each eye. Daily administration of chloramphenicol will continue until circumstances require its withdrawal.

COMMENT

Earliest description^{2,3} of CON have implied an uncertain relationship between group B vitamins and chloramphenicol. In theory, the latter may either interfere directly with end effects of group B vitamins or cause vitamin B deficiency through destruction of intestinal bacteria necessary for synthesis or utilization of group B members. More recently, Wilson⁴ has noted similarities between CON and visual disturbances reported in postwar studies of nutritionally deprived individuals.

The notion of nutritional deficiency, perhaps of group B vitamins, has been prevalent over the years. Consequently, vitamins have been used in treatment of CON in varying doses and under a wide range of therapeutic programs. Fifteen case reports¹⁻⁹ have involved use of vitamins, dosage largely unspecified, in treatment of CON. Twelve patients given vitamins showed a return to normal visual acuity or functional return of vision; three were left with significant residuals. Eighteen case reports¹⁰⁻¹⁵ detail no treatment with vitamins. In these patients, ten improved or cleared spontaneously, and eight were left with significant visual impairments. A cause and effect relationship with improvement while receiving vitamins has not been established, but the method which most consistently has yielded the best results has combined both immediate withdrawal of chloramphenicol and the administration of vitamins.

Methods of prevention of CON have received relatively little attention to the present. Reliance has been placed on early detection of visual abnormalities. The utilization of group B vitamins in large doses as prophylaxis against CON has not previously been recorded. Observations that many patients had onset of CON while receiving multivitamin preparations have been interpreted by some¹⁶ to minimize the value of vitamins in prevention of CON. Upon inquiry, however, the vitamin content of these preparations might best be categorized as small, randomly constituted, or unrecorded.

As early as 1950, Woolington et al¹⁷ described routine administration of "massive" doses of vitamins B and C during therapy with chloramphenicol. In a five-year study of 632 patients so treated, no episode of apparent visual derangement was recorded, although visual changes were not specifically monitored.