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CONGENITAL CNS DEFECTS

NEURAL TUBE DEFECTS. SPINA BIFIDA.

Investigators from the Greenwood Genetic Center, South Carolina and Department of Pediatrics, U. of North Carolina, Chapel Hill, studied 6 fetuses weighing < 1 kg with spinal defects detected through maternal serum-fetoprotein or ultrasound examination in the midtrimester. Infusion through the umbilical artery, using 5 ml or less of a mixture of barium and gelatin heated to 55°C, demonstrated abnormalities of the arterial supply to the region of the neural tube defects in all cases.

Since embryologically these arteries develop prior to closure of the neural tube, the authors propose that the vascular disturbances limit nutrition to the developing neural tissue and supporting structures, preventing neural tube closure. The vascular abnormalities are considered to be primary malformations that lead to neural tube defects rather than secondary morphologic disturbances resulting from neural tube defects. (Stephenson RE, Aylsworth AS et al. Vascular basis for neural tube defects: a hypothesis. Pediatrics 1987; 80:102-106).

COMMENT: The authors comment that their hypothesis for the formation of spina bifida is in contrast to that of an overdistension and rupture of a previously closed neural tube, as suggested by Gardner and Breuer. Nutritional inadequacy is a proposed mechanism. Folate treatment before conception prevented recurrence of defects (Laurence KM et al. Br Med J 1981; 282: 1509), and periconceptional vitamin supplements containing folic acid, ascorbic acid, and riboflavin were also effective (Smithells RW et al. Arch Dis Child 1981; 56:911). Among 397 given supplements only 3 had a second infant with a neural tube defect whereas of 493 mothers not receiving a vitamin supplement, 23 had recurrence of affected infants. Reports suggesting that the use of spermicides may increase the risk of neural tube defects (Huggins G et al. Contraception 1982; 25:219) have not been supported by results of a study published by Louik C et al in the current Aug 20 issue of the N Engl J Med 1987; 317:474-8. The risks of five specific birth defects, including neural-tube defects and Down's syndrome, were not increased by exposure to spermicide contraceptives in the first four months of pregnancy, at the time of conception, or at any time before conception.

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