ABSTRACT

A post-Hurricane Gilbert increase in neural tube defects in Jamaica, associated with a diet comparatively low in folate, in the periconceptional period.

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An increase in obvious live-birth neural tube defects (NTDs), spina bifida cystica (meningocele, myelomeningocele) and encephalocele, occurring in Jamaica, 11-18 months post-Hurricane Gilbert, and periconceptionally coinciding with a rise in megaloblastic change in homozygous sickle cell (HbSS) patients, was investigated by a retrospective case-control study.

A detailed health, environmental and dietary history was done on each of the 17 cases, i.e., mothers of the affected babies and 51 controls i.e., mothers of babies born without obvious physical or developmental problems, of birth weight >2.5 kg. Cases (Group 1) and controls (Group 2) were matched for educational level, parity, age group, periconceptional geographic location, and month and year of conception.

The cases reported a significantly lower mean intake of dietary folate in the periconceptional period (154, 95% C.I. 123-185) than the controls (254, 95% C.I. 233-275), $p<0.0001$. There was no apparent association

with maternal medication use, but oral contraceptive use in the periconceptional period was higher among the cases.

Reports of trauma (due to blows and falls) in the periconceptional period was significantly higher among the cases $p<0.0005$. None of the cases and only one of the controls was on a vitamin supplement containing folate in the periconceptional period.

There was no apparent association with maternal smoking, alcohol, ganja or drug abuse, pesticide exposure, intake of previously suspected teratogenic foods, bush teas, pica, environmental or psychosocial stress, hyperemesis, hypertension, spacing of pregnancies, incestuous parenting, or previous birth defects. Stillbirths had occurred in previous pregnancies of two of the cases and none of the controls.

Three of the cases have since given birth to normal infants. In each of these cases, a higher intake of folate was reported for the periconceptional period of the subsequent pregnancies.

The results show that this post-hurricane increased incidence of live-birth neural tube defects, occurring in Jamaica, was associated with a maternal diet comparatively low in folate in the periconceptional period.