maternal blood. Many immature infants do not come to necropsy and the cause of death is simply reported as "prematurity". Yet in many of the cases which do come to necropsy the cause of death is found to be atelectasis, even when there has been no clinical suggestion of respiratory distress before death.

Perhaps our excellent standard of obstetrics, supplemented by more care in avoiding blood aspiration, could bring our perinatal mortality down to the levels of our neighbours across the sea.

Newborn Nursery,
Hotel Dieu Hospital,
Cornwall, Ontario, Canada. CHARLES B. PENDER.

ÆTIOLOGY OF MIGRAINE

SIR,—I have made the clinical observation that the frequency of attacks in migrainous subjects tends to diminish when an additional long-term disability is acquired —for example, post-herpetic neuralgia or a painful peptic ulcer. Should this observation be borne out by statistical scrutiny, it might lead to a reappraisal of the importance of psychodynamic factors in the ætiology of migraine.

Sefton General Hospital,
Liverpool L15 2HE. H. J. GOLDSMITH.

PLASTICISERS FROM P.V.C.

SIR,—Several laboratories, including our own, have demonstrated the presence of phthalate ester plasticisers in blood and acid-citrate-dextrose solutions stored in disposable polyvinyl chloride (P.V.C.) plastic blood packs.[1-3] Our own work [4] has shown a level of 6 mg. di-2-ethylhexyl phthalate (D.E.H.P.) per 100 ml. of blood stored at 4 °C for twenty-one days. We have, furthermore, shown the extraction by blood of plasticisers from P.V.C. plastic laboratory and surgical tubing.[5] Our most recent experiments indicate the extraction of two phthalate ester plasticisers by blood from tubing used in the Travenol hæmodialysis and Travenol heart-lung-bypass systems.[6*] We have lately reported the presence of a phthalate ester plasticiser in the tissues of two patients, of whom one had received a large number of blood-transfusions (13 units) and the other, as well as having had a number of blood-transfusions, had been on cardiopulmonary bypass for 3 hours.[4]

Our laboratory is currently investigating the toxicological implications of plasticisers in vivo. In order to assess the effects of plasticisers in man, we can assume that patients on chronic hæmodialysis would be best suited to the evaluation of phthalate esters. To document the presence of plasticisers in such people, we are attempting to obtain tissues from them, either when they come to necropsy or at the time of kidney transplantation.

The excellent record of safety of P.V.C. medical devices indicates their general lack of toxicity and the ability of the human organism to dispose of the extracted plasticising materials. However, we reject the contention of Dr. Gesler and Dr. Kartinos [7] that the margin of safety of D.E.H.P. may be greater than that of water. Since D.E.H.P. is lipophilic, like D.D.T. and the chlorinated biphenyls, its storage in body tissues becomes an important consideration, and thus, more investigations of tissue levels of phthalate ester plasticisers are indicated.

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*This work was done in collaboration wi
Baltimore City Hospitals hæmodialysis u
Gott, department of surgery, Johns Hopki

Department of Environmental Medicine,
School of Hygiene and Public Health,
Johns Hopkins University,
Baltimore, Maryland 21205.
RU...
ROBERT J. RUBIN.

TETRAPLOIDY IN CELLS CULTURED FROM AMNIOTIC FLUID

SIR,—Amniocentesis is a feasible and acceptable procedure for the intrauterine detection of chromosomal abnormalities. Edwards,[1] however, cautioned against its use by laboratories not experienced in the technique. We should like to report the findings, from 2 laboratories, of tetraploidy and tetraploid mosaicism in cells cultured from amniotic fluid. This is particularly pertinent in view of Carr's finding,[2] that women who have been taking oral contraceptives within 6 months of becoming pregnant have a significantly increased frequency of triploid and tetraploid fetuses.

A 29-year-old woman, mother of 2 sons with trisomy 21 (47,XY,21+), underwent amniocentesis during the 4th month of her third pregnancy. Chromosome analysis performed after the amniotic cells had been in culture 42 days revealed only tetraploid cells (30 metaphases examined). The pregnancy was allowed to go to term, and the mother delivered a normal female infant. Peripheral-blood cultures performed on the infant shortly after delivery, and on both parents, revealed normal chromosomes and showed no evidence of significant polyploidy.

A 14-year-old girl underwent amniocentesis during the 26th–30th week of gestation because of suspected fetal malformation. Chromosome analysis of amniotic cells after 20 days in culture revealed 4 out of 30 (13%) tetraploid metaphases. The diploid cells had a normal male karyotype. A second chromosome analysis performed on this same culture 2 weeks later—i.e. after 35 days in culture—revealed no tetraploid cells. After 9 months' gestation, the mother delivered a healthy male infant. Chromosome analysis on the baby shortly after delivery revealed normal chromosomes and no evidence of tetraploidy.

A 28-year-old woman, whose first child, a boy, had trisomy 21 (46,XY,21+), underwent amniocentesis during the 4th month of gestation. Chromosome analysis of the amniotic cells after 14 days in culture revealed 111 out of 200 (56%) tetraploid metaphases (92,XXYY). Amniocentesis was repeated 3½ weeks later, and chromosome analysis after 11 days in culture again revealed 21 out of 40 (50%) tetraploid metaphases. On the basis of these findings the pregnancy was terminated. The aborted fetus appeared normal. Chromosome analysis of fetal skin-cultures revealed 3 out of 100 tetraploid cells, and cord-blood showed 2 out of 668 tetraploid cells. Karyotypes of both parents were normal.

We feel that the finding of a significant number of tetraploid cells in amniotic-fluid cultures presents a diagnostic dilemma. Is this a normal (though uncommon) phenomenon of amniotic-cell cultures, or should such laboratory results constitute an indication for pregnancy termination? The fact that in our third case cultures from two separate amniocenteses revealed similar degrees of tetraploidy makes a laboratory artefact unlikely. In addition, since the karyotype was male, these could not have been maternally derived cells.

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