MEDICINE TODAY

"Medicine Today" is the television series for doctors produced by the B.B.C. Advice on the preparation of the programme is given by the Association for the Study of Medical Education.

The programme on B.B.C. 2 on 2 January was on the subject of foetal growth. Printed below is an article prepared with the help of expert contributors to complement the television programme, which will be repeated on B.B.C. 1 on 10 January at about 11 p.m.

In Medicine Today a discussion between Dr. F. S. W. Brimblecombe and Mr. H. Gordon underlined the need for the obstetrician to detect failure of foetal growth during pregnancy and to work closely with the paediatrician in the special care of those infants whose birth weights are below average for the duration of gestation, and who therefore are at greater risk than normal. The problems of these babies were dealt with on a previous occasion in the television series.

The need for accurate data concerning the duration of pregnancy is a prerequisite for detecting a failure of foetal growth. Assessment of the size of the uterus is most accurate in early pregnancy; but account must be taken not only of the fundal height but also of the size of the whole uterus, its relationship to the pelvic cavity, the presence of previous caesarean section scars that may pull the uterus higher into the abdomen, and the stature of the patient. The menstrual history should be carefully recorded at the first visit, together with the date of the first day of the last normal menstrual period and eventually the date when foetal movements are first felt.

Factors Predisposing to Retarded Foetal Growth

Gruenwald" and others have used similar but slightly different criteria. Failure of foetal growth may occur in any pregnant woman, but certain groups of women are more likely to give birth to a baby whose weight is below average for the duration of gestation. These include primigravidae, women of any parity over the age of 35 years, those with hypertension from any cause, those of short stature and in the lowest socio-economic groups, those who have previously had babies of abnormally low birth weight or a previous stillbirth attributed to intrauterine hypoxia, and possibly those who smoke and those with bleeding in early pregnancy or antepartum haemorrhage.

Clinical Signs of Retarded Foetal Growth

Women who are more likely to give birth to a baby below average weight and all those in whom the foetus appears to be growing poorly during pregnancy ideally should be seen by the same person and more frequently than usual (at least fortnightly after the onset of foetal movements until 28 weeks and weekly thereafter). Though clinical estimates of foetal size are often unreliable, repeated observations by the same obstetrician may well show that the growth rate of the foetus has slowed down. Such evidence is reinforced if maternal weight gain is poor and the abdominal girth remains stationary or decreases.

The volume of the amniotic fluid decreases when placental function is impaired. Gadd and others have confirmed this by direct serial measurements of the volume of the liquor amnii. Clearly, the volume of amniotic fluid must be taken into account when measuring girth and assessing foetal size, and it is also a guide to foetal maturity. Until about 28 weeks the volume of fluid in the amniotic sac bears a constant relationship to the size of the baby. After this there is normally a gradual but progressive apparent reduction in amniotic fluid volume relative to the size of the baby, while from 38 weeks onwards there is an absolute reduction in the amount of liquor amnii so that in Wrigley's words "the uterus feels full of baby."

A persistent decline in the total amount of foetal activity is often noticed by the patient and provides indirect evidence of placental insufficiency. Patients should therefore be questioned closely about the pattern of foetal movements at each visit, so that both they and the obstetrician can be aware as early as possible that the foetus is becoming more lethargic.

Special Tests of Foetal Well-being

An important cause of retarded foetal growth is the failure of placental exchange. Mothers in high risk groups and particularly those in whom there is clinical evidence of retarded foetal growth should be given special attention, perhaps by admission to hospital for continuous observation and rest, which is known to have a beneficial effect on uterine blood flow.

When the exact duration of pregnancy is uncertain radiological examination for the foetal centres of ossification may help to distinguish small mature babies whose growth is retarded from normal but immature infants. However, x-ray assessment of foetal maturity can seldom give an estimate nearer than plus or minus two weeks.

Serial estimations of maternal urinary oestriol excretion are helpful in the evaluation of foetal well-being. If facilities for the tests are available they should be done as soon as the possibility of placental insufficiency is suspected. When foetal growth is severely retarded estimates of oestriol excretion may cease to be of value after 28 to 32 weeks, because the levels have already begun to fall.

Continuous monitoring of the foetal heart rate, most easily achieved by external foetal phonocardiography, provides a direct means of assessing foetal health. Unless the foetus is asleep or drugged because of sedatives given to the mother the foetal heart rate normally shows wide variations in rate, while the basal rate is below 155 beats per minute. Stimula-
tion of the foetus by uterine contractions, palpation, or noise normally elicits a sympathetic tachycardia. As a deprived foetus becomes more and more hypoxic so the basal foetal heart rate rises above 155 beats per minute, sympathetic tachycardia is eliminated, as is the normal wide variation in the tracing so that it becomes much flatter, and eventually prolonged bradycardia occurs in response to sluggish foetal movements and weak Braxton-Hicks contractions. Though still in the developmental stage, serial recordings of the foetal heart rate promise for the near future the most likely additional guide to the optimum time for delivery of babies who have ceased to grow. This sort of help is specially needed when foetal growth falters early in the last trimester and the hazards of immaturity also have to be taken into account.

Amniocentesis

Amniocentesis has been used as a means to obtain liquor amnii for inspection when placental insufficiency is suspected and meconium-staining may be seen. More recently it has been suggested that examination of foetal cells shed into the amniotic fluid may help in the estimation of foetal maturity, as may estimation of the creatinine content. However,
amniotic fluid is often difficult to obtain when its volume is small, and it is then that serious trauma to the foetus is most likely to occur. Justification for this approach is therefore in some doubt, particularly if the placental site cannot be avoided with certainty in an unsensitized rhesus negative woman.

Ammioscopy is a much more acceptable means of detecting meconium staining of the amniotic fluid before the membranes rupture. At a time when induction of labour might otherwise be contemplated using an arbitrary rule, ammioscopy can give accurate information about the colour and volume of the liquor amnii and provide a more rational guide. All the reports of the use of ammioscopy have shown that the perinatal mortality rate and the necessity for surgical induction of labour are reduced without any rise in the operative delivery rate.21

After rupture of the membranes an assessment of the foetal acid–base balance can be made from blood samples obtained through the cervix from the presenting part of the foetus. This enables an accurate assessment to be made of the baby's reaction to the stresses of labour.22 Babies whose growth has been retarded in utero and whose reserves are exhausted may suddenly die during labour. Precise knowledge that such a situation exists can be obtained with the aid of these estimates of the acid–base balance. The paediatrician must be informed that such disturbances have been detected during the course of labour so that serial measurements can be continued after birth and the appropriate action promptly taken to correct any disorders of metabolism.

## ANY QUESTIONS?

**We publish below a selection of questions and answers of general interest.**

### Oxalic Acid in Rhubarb and Spinach

Q.—How much oxalic acid is present in 
(a) rhubarb, 
(b) spinach? Is it a danger to health?

A.—In a recent comprehensive study of the oxalate content of British foods Zaremski and Hodgkinson1 give values of between 260 and 620 mg. anhydrous oxalic acid in 100 g. fresh rhubarb. They also quote values from the literature of between 153 and 1,336 mg. per 100 g. The amounts seem to depend upon the variety of the plant which is studied and the season when it is collected.

These authors also obtained values of 458 and 780 mg. per 100 g. fresh frozen spinach and per 100 g. "long-standing round spinach" respectively. They also refer to values within the range 364–1,050 mg. per 100 g. reported by other workers.

Normal dietary oxalate is not regarded as a health hazard.

### Phrynoderma

Q.—What is the aetiology of phrynoderma, and what is the treatment in the case of a child aged 3?

A.—The condition known as phrynoderma is excessively rare in this country. The condition is usually frequent used loosely to describe a condition, fairly common in young women and children, known as keratosis pilaris. It is this condition to which the question probably refers.

Keratosis pilaris is often associated with mild generalized dryness of the skin. The tiny follicular papules, which contain keratin plugs or curled-up hairs, tend to be distributed principally over the extensor aspects of the upper arms and thighs, and bear a superficial resemblance to "goose pimples."

The aetiology of this benign disorder is unknown. Dietary factors play no part in its genesis, and vitamin-A therapy particularly is not indicated. Paradoxically a clinically similar condition may be seen in early cases of hypervitaminosis A, and it may be worth checking on this child’s intake of vitamin supplements. It has been suggested by some authorities that keratosis pilaris may be a mildly form of ichthyosis in which the abnormality of keratinization is confined mainly to the follicular wall.

### Non-barbiturate Hypnotics with Antidepressants

Q.—Are non-barbiturate hypnotics such as nitrazepam suitable for giving to patients on antidepressant drugs such as amitriptyline or imipramine?

A.—I do not know of any reports which refer specifically to untoward reactions occurring when ordinary therapeutic doses of non-barbiturate hypnotics such as nitrazepam have been given to patients on antidepressant drugs. Nevertheless, it should be realized that in these circumstances, when two drugs which act centrally on the nervous system are being administered together, some interaction is likely to occur, and one should be alert to the possibility of unusual or untoward reactions.

## REFERENCES


