

INSUFFICIENCY OF THE PLACENTA

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Studies on the human placenta present great difficulties. Despite these difficulties, research into its physiology has made great strides within recent years.

Wislocki and his collaborators were the first to employ successfully histochemical staining methods on the human placenta. The placental physiology of iron, glycogen, fat and proteins has been revealed through this technique. Study of the placenta by this method has shown that, short of infarct formation, there is a decided tendency to premature senility and that at thirty weeks it may have the chemical reactions of a placenta at term.

Louis Flexner and his colleagues are accredited the pioneers in the use of radioactive isotopes. These workers employed radioactive Isotope Na 24 and found that the permeability varies inversely with the number of Grosser-Mossman layers in the order — Epithelio-chorial, Syndesmo-chorial, Endothelial-chorial and Haemo-chorial (in humans). Flexner et alia thus showed that in women at term, 99.9% of Sodium reaching the foetal circulation is returned to the mother.

Studies of placental function in cases of hypertension complicating pregnancy and in pre-eclampsia were attempted by J. McClure Browne using radioactive Na. In these conditions, impairment of function of the placenta was found to be present as a result of diminution in the clearance rate of this tracer substance.

The human placenta, among other functions, secretes at least three hormones, namely chorionic gonadotrophin, oestrogen and progesterone. In pregnancy complicated by Diabetes mellitus, hormone imbalance is known to be present. Smith

and Smith found a persistently low pregnanediol as well as a low oestrogen level in the serum and urine in cases of diabetic pregnancies, whereas the chorionic gonadotrophin showed a significant rise.

It is an accepted fact that several babies are lost in cases of diabetic pregnancies unless the obstetrician rescues the foetus prior to the spontaneous onset of labour at term. Although the placenta in diabetic pregnancies may be abnormally large, it is definitely insufficient for purposes of normal function. The Smiths, as well as White, advocate oestrogen/progesterone therapy throughout the pregnancy, while termination of the pregnancy at around the 36th or 37th week, either by a Surgical Induction or by a Caesarean Section, is practised by the majority of obstetricians.

In Essential Hypertension complicating pregnancy, the placenta may be the seat of widespread infarction, and this, in turn, leads to insufficiency of the placenta. The obstetric management consists of control of the essential hypertension, avoidance of superimposition of pre-eclampsia and termination of the pregnancy at a suitable time. Even in cases of uncomplicated essential hypertension, it is not desirable for the baby's sake to allow the pregnancy to go beyond term. The functional activity of the placenta may be so precarious that the life of the foetus may be put in serious jeopardy if the pregnancy is allowed to go beyond term.

A varying degree of insufficiency of the placenta may also be observed clinically in pre-eclampsia. In pregnancies complicated by pre-eclampsia and by chronic hypertension, the foetus, as a rule,

grows slowly and when born may be premature by weight. The placenta, on inspection, may be on the small side with scattered areas of infarction prominent on its surface. During labour in a few cases the foetal heart becomes suddenly inaudible during a contraction, and this clinical observation is more noticeable in cases of prolonged labour. The obstetric treatment is directed towards the prevention of eclampsia and the delivery of a live baby which is capable of survival. Failure to intervene by a surgical induction of labour and/or Caesarean Section at the appropriate time will not only have serious repercussions on the mother, but will also enhance greatly the risk of intra-uterine death of the foetus.

In the absence of any demonstrable cause, habitual death of the foetus in utero is sometimes ascribed to lack of proper functioning of the placenta. Some obstetricians claim that this condition is associated with hormone imbalance and in the management of these cases they prescribe increasing doses of oestrogen and progesterone throughout the pregnancy. But the overall important obstetric treatment — careful timing in the delivery of the foetus by section, prior to the risk of intra-uterine death — remains.

Within recent years the problem of "postmaturity" has received considerable

attention. No hard and fast rules can be laid down although most obstetricians would feel at ease if an uncomplicated pregnancy were not allowed to proceed longer than two weeks beyond term. In cases of prolonged pregnancy, placental insufficiency has been blamed for the occasional loss of foetal life occurring just before the onset of labour or, more commonly, during the actual labour.

In cases of prolonged labour where the membranes have been ruptured for over 24 hours, encroachment of the placental site is known to occur. This encroachment leads to impairment of function of the placenta and has been observed clinically to produce intra-uterine death of the foetus. Very careful attention to the foetal heart-beats must be maintained, and measures to effect a quick delivery must be at hand if the foetus shows signs of going into distress.

CONCLUSION:

The human placenta is a very complex organ. Studies of its function in health and in disease are far from complete. The observations referred to in this paper have been made clinically from time to time and over a period of years.

In the absence of adequate knowledge, the obstetrician must be guided by his judgement and by the result achieved over the years.