Acta Genet Med Gemellol 28:293–296 (1979)
The Mendel Institute/Alan R. Liss, Inc.

Session II

Pathophysiology of Twin Pregnancy

Discussion following papers presented by Dr. Persson and Dr. Schneider

Dr. Cetrulo asked Dr. Persson about the assessment of intrauterine growth retardation in primigravidae, the problem being that the biparietal diameter (BPD) is one of the last diameters to be affected, and even in normal growth the increase in BPD is often asymmetrical.
Dr. Persson replied that reduction in the BPD of the first twin was 30% as compared to the singleton fetus. In 50% of cases of retardation this was a typical reduction in the BPD but often the reduction was not related to birth weight.
Dr. Bessis asked about the problem of presentation. It was often difficult to get an accurate biparietal measurement in breech presentation as compared to vertex.
Dr. Persson admitted to having this problem in breech and vertex presentation. He found a significant difference between first twin and second twin BPD, the first twin being larger in 80% of cases. This fact was disputed by Dr. Schneider.
Dr. Shah asked about the problem of identifiying the twins on subsequent measurements when determining growth retardation.
Dr. Persson replied that it was possible to identify them, as they usually do not change places, especially if the first twin presenting part was already in the pelvic brim. If twins change places and it was a different twin being measured in subsequent examinations, then the difference in BPD would disappear.
Dr. Schneider said that in his experience such difference in the first and second twin was not present.
Dr. Persson suggested that the reason there was no difference may be related to the fact that patients were being rested from 29 weeks to almost term and that might improve fetal growth.
Professor Papiernik asked if Dr. Persson had information on chest and abdominal diameters in addition to BPD.
Dr. Persson replied that he did have such measurements but the information was not yet ready; however, the impression was that there were less marked differences in chest and abdominal diameter as compared to BPD.

Professor Leroy asked Dr. Schneider what was the critical gestation in pregnancy for the "vanishing" twin.
Dr. Schneider replied that his study was carried out in the first trimester of pregnancy, and the critical period appears to be the tenth week. The majority of the twins "vanished" before the 10th week. Only 20–25% disappeared after the 10th week.
Professor Leroy asked whether there was a high incidence of "vanishing" twins in those cases where the twin pregnancy was the result of induced ovulation with clomiphene and asked also whether a contributing factor was inadequate corpus luteum.
Dr. Schneider replied that there was a high incidence of chromosomal abnormalities in pregnancies resulting from induction of ovulation as compared to spontaneous pregnancies and the sample applied to gonadotrophin-induced ovulation and the resulting pregnancies.
Professor Papiernik said that there were two different populations of patients; gonadotrophin-induced ovulation patients never ovulate without the aid of gonadotrophins, whereas clomiphene-induced ovulation cases can ovulate spontaneously from time to time.
Professor Leroy asked whether they had any evidence of the vanishings sacs in cases of singleton pregnancy and what was the incidence of such cases.
Dr. Schneider replied that this basic study had not yet been carried out.

0001-5660/79/2804-0293$01.10

Professor Leroy asked about the incidence of both twins disappearing and asked what was the zygosity of these disappearing twins.
Dr. Schneider replied saying that obviously it was difficult to determine zygosity at that early stage of pregnancy.
Professor Leroy elaborated further and said that it is possible it is the DZ twin pregnancy in which one sac disappears and the other continues, whereas in the MZ pregnancy both sacs disappear.
Dr. Schneider replied that the incidence of disappearance of both twins was 4.6–10% in the literature and 5% in his own study. There was a further discussion on identifying the sacs of MZ and DZ twin pregnancy cases, but an ultrasound examination is very difficult.
Dr. Keith asked about the presence of two sacs if they were identified by ultrasound; does that relate later on to zygosity of the twins?
Dr. Derom asked similarly the question about the identification of the sacs and how easily could it be done on ultrasound.
Dr. Keith suggested that in future publications it will be very helpful to have the exact technical details of ultrasonic examination in these cases to help in interpretation of the results.
Professor Lazar postulated that in the case of the disappearing twin it is likely to be a DZ twin pregnancy in which one might disappear while the other continues, because if it is an MZ twin pregnancy, then both should disappear.
Professor Leroy said that in the majority of cases of ovular resorption there was no clinical manifestation, and in only 40% of cases there was associated slight vaginal bleeding.
Dr. Derom asked if any twin pregnancies were missed.
Professor Papiernik replied that they missed one case of twin pregnancy in 166 cases.
Dr. McDonald wondered whether the fetus papyraceous was an example of late resorption.
Dr. Schneider replied that in all cases of vanishing twins there was no histological or clinical evidence of the fetus which had disappeared in the first trimester. The fetus papyraceous appears to be a separate condition altogether.

Discussion following papers presented by Dr. Hall, Dr. Campbell, and Professor MacGillivray

Dr. Cetrulo asked Dr. Hall if, as it is known that patients with a twin pregnancy do not respond to iron therapy, lack of response to treatment with iron would suggest the diagnosis of multiple pregnancy.
Dr. Hall replied that one has to define clearly what is meant by lack of response to iron therapy and whether it is just failure of the haemoglobin concentration to rise or is it a case of iron deficiency anaemia as confirmed by change in the morphology of red cells. In the cases of twin pregnancy there is lack of response to iron as judged by the haemoglobin concentration, and this is because of the marked increase in plasma volume, but there is no anaemia in the first place.
Professor MacGillivray said that the increase in plasma volume is, in fact, the manifestation of a good response to pregnancy.
Dr. Keith asked what is the mean haemoglobin concentration in cases of singleton pregnancies in Aberdeen.
Dr. Hall replied that she was not absolutely sure of the exact figure, but 12.5 gm was the usual textbook answer to this question.
Professor Whitfield asked whether the incidence of anaemia in Aberdeen was low as compared to Glasgow, and whether there was a marked regional variation in the incidence of anaemia.
Dr. Hall replied that it is possible to have regional variation, which could be due to a nutritional factor, and this could account for the differences in incidence of anaemia between different regions.
Professor Whitfield asked about the incidence of megaloblastic anaemia in twin pregnancy.
Dr. Campbell replied that from the literature it was difficult to find out the incidence of megaloblastic anaemia in twin pregnancy.
Dr. Keith asked whether in a patient who came into the hospital for delivery, either operative or non-operative, and had a blood loss of, say, 1500 ml, the increased plasma volume would be enough to compensate for this blood loss in the postpartum period or whether some treatment would be required.
Dr. Hall replied that, on the whole, these patients do fairly well in labour, though those who lose an excessive amount of blood from postpartum haemorrhage do require a blood transfusion; however, routine prophylactic iron in all cases of twin pregnancies is not necessary.

Professor Papiernik asked whether Dr. Hall had any figures on incidences of postpartum anaemia – say, haemoglobin below 10 gm/dl.
Dr. Hall replied that, in the total population it was found that postpartum haemoglobin was the same as first-booking haemoglobin, but there was a drop in concentration in later weeks of pregnancy. The postpartum haemoglobins were done as late as possible to pick up cases of megaloblastic anaemia before the patients were discharged. Blood estimations were carried out round about the sixth postpartum day. In 25% of cases the anaemia occurred for the first time in the postpartum period. In the total population study there were no cases of haemoglobin less than 8 gm, and certainly patients with twin pregnancy going into labour with 10 gm haemoglobin need not be cross-matched.

Professor Papiernik asked Dr. Campbell about the hormonal changes in pregnancy that would alter the insulin requirements in cases of twin pregnancies with diabetes.
Dr. Campbell replied that it depends on how diabetes is defined. In cases of pregnant diabetics on insulin the requirements will go up, but there are not very many insulin-dependent diabetics in our region who had twin pregnancies. Gestation diabetes cases are a totally different group.
Professor Papiernik asked about these hormonal changes which alter the insulin requirement and especially if Dr. Campbell had figures on changes in human placental lactogen (hPL) levels in her series.
Dr. Campbell replied that hPL values were available in a few cases, but the hormonal change is not just due to the increase in hPL levels but to a combined change in the levels of oestrogen, progesterone, and hPL, which would account for increased insulin requirements in pregnancy.
Dr. Cetrulo asked about the two-hour glucose test compared with two-hour postprandial blood glucose level in the diagnosis of class A diabetics.
Dr. Campbell said that it all depends on the definition of diabetes in relation to the glucose tolerance test.
Dr. Cetrulo said that in his study he found the two-hour postprandial test was more useful as a screening test for class A diabetes.
Professor Papiernik asked whether he had any information in cases of twin pregnancy.
Dr. Cetrulo replied that in his opinion there is no change in the case of twin pregnancy in the postprandial blood glucose levels.
Dr. Cetrulo asked how abnormal glucose test was diagnosed in Aberdeen.
Dr. Campbell replied that this was on the basis of change in the increment index, and cases diagnosed as chemical diabetes by this test were not treated.
Professor MacGillivray said that there is still considerable controversy regarding the definition of gestational diabetes and in cases of oral glucose tolerance test, another complicating factor would be uncertainty in the rate of absorption of glucose.
Dr. Hall wondered whether there should be a different cut off point in the diagnosis of an abnormal test in twin pregnancy compared with singleton.
Professor MacGillivray said that was why his team was trying to establish the normal values of all the parameters in twin pregnancies.
Professor Whitfield and Dr. Keith agreed that the normal values for twin pregnancies are different from singleton and they should be clearly established before any attempt is made to define abnormal values.

Dr. Keith asked Professor MacGillivray what advice was given pregnant women regarding their diet when they attended the clinic.
Professor MacGillivray replied that the study is still going on in singleton pregnancies. There are two groups of patients, the control group and one in which the diet has been supplemented with extra proteins and calories. The preliminary analysis of the results shows that it is not necessary to have increases in the protein to produce heavier babies, but just increase in the carbohydrate content of the diet, and this is in keeping with the Guatemala study. He felt that in twin pregnancies the study could be done by giving half the patients just chocolates to increase the carbohydrate content.
Dr. Keith said he would like his opinion on the advice about basic diet for a pregnant patient attending the antenatal clinic.
Professor MacGillivray said this was difficult to answer just now because we do not know whether women with excessive weight gain are going to produce bigger babies or are just going to increase their own fat. Another study on the effects of giving a reducing diet to obese women has been started, but he could not say whether by eating more the mother is going to produce a bigger baby.

Dr. Cetrulo asked if "bigger" necessarily means "better" babies.
Professor MacGillivray said that he was not just referring to weight but also to length of the baby; if it is longer, it is better, but if it is fatter then it is not necessarily a healthier baby.
Professor Papiernik said they were doing a similar study in France comparing slim women with obese women. These women are also very figure-conscious. By giving them proper dietary advice and encouraging them to increase their carbohydrate intake, they will increase the size of the baby. In the case of obese women whose actual calorie intake is less than the control group, if the diet is reduced slightly further, then the mean birth weight of the baby is reduced. He had not, however, studied any cases of twin pregnancies in terms of dietary intake.
Dr. Campbell asked how the dietary intakes were estimated.
Professor Papiernik replied that by questionnaire techniques the dietary intake was studied over a period of weeks.
Dr. Keith asked what the effects of alcohol ingestion during pregnancy either in singleton or in cases of multiple pregnancy were.
Professor MacGillivray replied that this was not a problem in the pregnant population in Aberdeen so far. It was very difficult to find out about the amount of alcohol intake in these cases, though it is quite easy to have an accurate idea about the protein and calorie intake.
Dr. Campbell added that most of the patients, when they got pregnant, either stopped taking alcohol or reduced it considerably.
Professor Leroy asked about dietary advice given to patients with multiple pregnancy developing preeclampsia.
Professor MacGillivray replied that, in a study carried out in singleton primigravid patients who had high weight gain and were liable to develop preeclampsia, reducing the energy intake did not reduce the incidence of preeclampsia.
Dr. Cetrulo referred to the effects of cigarette smoking in pregnancy and wondered whether a combination of cigarette smoking and anaemia was a particularly lethal combination.
Dr. Hall replied that birth weight in infants of cigarette smokers was lower, but not disastrously low.
Dr. Hall said she could see the potential problem in cigarette smokers who had a low plasma volume and low haemoglobin concentration, and smoking could be a potential problem in terms of oxygen-carrying capacity.
Dr. McDonald wondered whether one should reduce the dietary intake in pregnancy at all.
Professor MacGillivray replied that a study is being carried out to see the effects of reduced diet when given to obese women. The present practice is not to give the reducing diet to the woman until she has finished breast feeding.