Abdominal Pregnancy — Urinary Oestriol Excretion


SUMMARY

Measurement of urinary oestriol excretion in a case of abdominal pregnancy terminated near 38 weeks' gestation with the delivery of a live normal child, has produced results which appear to be of little assistance in the use of this investigation for the management of such patients. In any attempt to reduce the perinatal mortality of abdominal pregnancy from the high 85.6%, more understanding of the physiology of the ectopic placenta, is necessary.


Perinatal mortality rates for advanced abdominal pregnancy range from 46% to 72% in reviewed series. However, by referring to figures obtained from a larger personal series in order to exclude bias introduced by the tendency to report cases with a successful outcome, a perinatal mortality figure of 85.6% is obtained (Table I).

TABLE I. PERINATAL MORTALITY FROM SOME LARGER SERIES OF ABDOMINAL PREGNANCIES

<table>
<thead>
<tr>
<th>Author</th>
<th>No. of cases</th>
<th>Surviving babies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelton</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>Charlewood and Culin</td>
<td>52</td>
<td>4</td>
</tr>
<tr>
<td>Lavery and Bowes</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Henderson and Wilson</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>15</td>
</tr>
</tbody>
</table>

% Perinatal mortality: 85.6

One is encouraged to adopt a positive attitude to the selected group of cases of advanced abdominal pregnancy diagnosed pre-operatively, while the foetus is alive, in the hope of delivering a healthy baby from a healthy mother, although the course may be stormy for both obstetrician and patient.

In view of contemporary attention directed towards improvement in perinatal survival figures, the problem of abdominal pregnancy presents a challenge in this field. Assessment of the prenatal foetal state and more attention to the pregnancy and neonatal care may improve perinatal survival rates.

Serial urinary oestriol determinations were made in a case of abdominal pregnancy to determine any possible value they might have in the management of these cases. The case is presented and the results discussed.

METHODS

Urinary oestriols of 24-hour urinary collections were assayed by the gas chromatographic method of Tietz, using a Beckman gas chromatograph. Normal levels of oestriol in pregnancy were determined by this technique by Scommegna and Chattoraj; and the lower limits of normal by this method closely approximate those determined by MacLeod et al. Oestriol excretion is low when there is less than 2 mg/24 h at 20-weeks, 8 mg/24 h at 30 weeks, and 12 mg/24 h at 40-weeks' gestation (Fig. 1). Management of the case was in no way affected.

CASE REPORT

From the time of hospitalization of the patient pregnant for 30 weeks and 4 days, until laparotomy and the delivery of a normal live female infant weighing 2.7 kg at 37 weeks and 5 days' gestation, frequent 24-hour
urine specimens were collected for oestriol estimations (Fig. 1).

On admission of the patient early pre-eclampsia was present, but this cleared quickly on bed-rest. There were episodes of left-sided abdominal pain and tenderness in the region of the placenta. 8

**DISCUSSION**

Urinary oestriol measurements are acceptable as an accurate method of assessment of foetomaternial welfare. A low level of oestriol excretion in an apparently obstetrically normal population, after 28-weeks' gestation, occurs in 15%, and this group has a remarkably high incidence of prenatal complications. 5 Low urinary oestriol determinations in pre-eclampsia, hypertension, and chronic renal disease have shown a direct correlation with foetal mortality and morbidity; there is also a close correlation with maternal anaemia, antepartum haemorrhage, and foetal abnormalities; 6 yet despite an encouraging improvement in perinatal morbidity and mortality resulting from the use of oestriol determinations, there are still a number of conditions in which the measurement of oestriol is of doubtful value, e.g. in diabetes and Rh-immunization during pregnancy.

Urinary oestriol measurements in this case of abdominal pregnancy have provided a pattern of persistently low levels of urinary oestriol excretion rising to normal limits only after the 36th week of gestation; this appears to be unusual.

Pre-eclampsia has been reported as a complication in 9.9% of cases of abdominal pregnancy, 7 an incidence about twice that of a normal obstetric population; and Hreshchyshyn et al. 8 recorded bleeding around the placenta in 10 of 101 reviewed cases. The present case showed signs of pre-eclampsia on admission, and the episodes of abdominal pain and tenderness localized to the placental site were regarded as due to some kind of placental abruption. Beischer et al. 9 recorded in abruptio placentae a low oestriol excretion rate 4 times the normal rate and in 39.1% of patients with low oestriol, a foetus showing intra-uterine growth retardation was delivered. In the present case, therefore, lower oestriol in the presence of these 2 known causative factors was to be expected.

The subsequent rise of urinary oestriol to within normal limits after the 36th week of gestation, and the delivery of a baby weighing 2.7 kg and showing no signs of growth retardation or dysmaturity, exclude the possibility of placental insufficiency explaining the very low oestriol levels which could be regarded as indicative of impending foetal death, in the absence of other causes for extremely low oestriols, such as anencephaly or placental sulphate deficiency. In this case no satisfactory explanation is offered.

On the basis of urinary oestriols alone, the termination of this pregnancy prior to the 36th week of gestation might have been strongly advised, but urinary oestriol measurements should be regarded only as a warning in the patient at risk, and other investigations are usually needed. Two of these are amniocentesis and amniocentesis, but they are contra-indicated or not practicable in cases of abdominal pregnancy. Routine procedure was followed in this case in this Department, and the time of delivery was planned in accordance with the stated gestational age and the size of the foetus. Ultrasonar biparietal cephalometry may be of more precise help in determining foetal size and it may assist in the more accurate determination of the best time for delivery, particularly in the Bantu patient, who is frequently uncertain regarding dates.

Caution should be exercised in drawing conclusions from only 1 case, because the normal excretory pattern of urinary oestriol in cases of abdominal pregnancy has not been previously assessed. Comparison of the results in this case with the normal range in the general obstetric population, has shown that results can be misleading in cases of abdominal pregnancy, and until more details are known of the physiology of placental function in abdominal pregnancy, the clinician should terminate the pregnancy at 36 or 37-weeks' gestation. 10 The increased risk of foetal death, the poor perinatal survival rate, and the higher incidence of pre-eclampsia and placental haemorrhage in these patients, are additional evidence of derangement of placental function.

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**REFERENCES**