Risk factors for abruptio placentae

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Summary

In a prospective study 90 patients who had confirmed abruption of the placenta were compared with a control group. Significantly more patients who had abruptio placentae were unmarried, smoked cigarettes, received no antenatal care, had coitus within the 48 hours preceding delivery, developed intrapartum hypertension and had a lower ponderal index than the controls. More patients with abruptio placentae had proteinuria and antepartum hypertension but statistical significance was not reached. In addition, the incidence of intra-uterine growth retardation was higher in these patients.

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Abruptio placentae causes 25 - 34% of intra-uterine deaths among patients in the lower socio-economic group in South Africa.[1-4] Unfortunately this serious condition cannot at present be prevented nor can it be predicted accurately. At Tygerberg Hospital abruptio placentae is the major cause of intra-uterine death during labour, even when the fetal heart rate has been monitored continuously.[5] It is also the main cause of intra-uterine death where normal antenatal fetal heart rate patterns have existed.[6] At present the only way to reduce the high perinatal mortality rate caused by abruptio placentae is to deliver the fetus immediately after the diagnosis has been made. However, for early diagnosis patients at risk need to be informed about the need to report symptoms such as pain or haemorrhage immediately. It is also necessary to know which patients are at risk. Several risk factors for the development of abruptio placentae have been reported in the literature but it is not known whether these can be applied directly to our patient population. The first step in the study of abruptio placentae is to establish the risk factors for the local population.

Patients and methods

From March 1984 to February 1985 patients who had an abruption of the placenta (study group) were compared with a control group. For the diagnosis of abruptio placentae the following criteria had to be met: (*i*) gestational age of at least 28 weeks; (*ii*) history of antepartum haemorrhage; (*iii*) demonstration of a retroplacental blood clot covering more than 15% of the total placental surface; and (*iv*) exclusion of placenta praevia.

If there was any doubt about the diagnosis of abruptio placentae, the patient was excluded from the study. For the control group the first patient who delivered after the one with abruptio placentae was selected. This usually meant that the control patient delivered

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within a few hours of the study patient. The study and control groups of patients were compared for the following: (*i*) age; (*ii*) marital status; (*iii*) cigarette smoking; (*iv*) gravidity; (*v*) parity; (*vi*) previous abruptio placentae resulting in a stillbirth; (*vii*) antenatal care (more than one antenatal clinic visit); (*viii*) threatened abortion; (*ix*) coitus within 48 hours of admission; (*x*) syphilis; (*xi*) vaginal flora (as assessed by the cervical cytology taken at the first antenatal visit); (*xii*) anaemia (haemoglobin less than 10,0 g/dl); (*xiii*) antepartum hypertension (blood pressure of 140/90 mmHg or more or an increase in the systolic pressure of at least 30 mmHg or in the diastolic pressure of at least 20 mmHg); (*xiv*) intrapartum hypertension (140/90 mmHg or more on two or more occasions 30 minutes apart within the first 4 hours after admission); and (*xv*) proteinuria.

Within 24 hours of delivery all patients were weighed and their height measured; these results as well as the mean weight gain per week were compared. Neonatal information used for comparison was birth weight, fetal sex, and growth retardation. For the assessment of growth retardation weight-for-gestational-age tables for the local population compiled by Jaroszewicz *et al.*[7] were used. The placentas were compared in respect of the weight and length of the umbilical cord. In all patients with abruptio placentae the size of the retroplacental clot was measured and expressed as a percentage of the placental surface.

All data were obtained from the patient or her obstetric notes within 24 hours of delivery. The data were analysed at the MRC Institute for Biostatistics. In the case of the continuous measurements the distribution of values was firstly assessed and then, if the distribution was normal, the *t*-test was used to compare the groups. When the distribution deviated too much from the normal, the Kruskal-Wallis or Wilcoxon tests were used. In nominal measurements the chi-square test was used to compare groups with one another. A *P* value < 0,05 was accepted as statistically significant. Initially patients in the study group with liveborn or stillborn babies were compared separately with their respective control groups. When no difference was found, data for live and stillborn infants were combined.

Results

There were 90 patients in each group. In 35 patients (39%) in the study group the abruption caused intra-uterine death. There were no intra-uterine deaths in the control group. Most of the babies born alive after abruptio placentae had been diagnosed were delivered by caesarean section.

The two groups of patients were comparable in respect of age, gravidity, parity, the number of primigravidas, previous abruptio placentae resulting in a stillbirth, threatened abortion, positive specific serological tests for syphilis, vaginal flora, anaemia, antepartum hypertension, proteinuria and weight gain (Table I). Since many patients had not attended any antenatal clinic, data for all patients were not available.

Significantly more patients in the study group were unmarried, smoked cigarettes, did not receive any antenatal care, had had coitus within 48 hours of admission and had intrapartum hypertension (Table II). The greatest difference between the two groups was in respect of coitus within 48 hours of admission. When these latter factors were analysed separately for liveborn and stillborn infants, no significant difference was found (Table III).

When infant and placental findings were analysed differences were great enough to allow separate analyses for liveborn and stillborn babies of the study group. Stillborn infants from the study group weighed less than liveborns (Table IV). In both the stillborn and liveborn abruptio placentae groups there were more male than female babies while there were the same number of boys and girls in the control group. The placenta weighed less in the patients where abruptio placentae had caused intra-uterine

TABLE I. COMPARISON BETWEEN STUDY ($N = 90$) AND CONTROL GROUPS ($N = 90$) — FACTORS NOT SIGNIFICANTLY DIFFERENT

	Abruptio placentae	Control group
Maternal age (yrs)	$25,1 \pm 5,8$	$24,7 \pm 7,4$
Gravidity	$2,5 \pm 1,7$	$2,3 \pm 1,7$
Parity	$1,3 \pm 1,6$	$1,6 \pm 1,6$
Weight gain/wk (g)*	420 ± 222	535 ± 414
Primigravidas (%)	37	36
Threatened abortion (%)	12 (13)	8 (9)
Positive serological tests for syphilis (%)	11 (12)	16 (18)
Anaemia (%)*	3/66 (5)	1/88 (1)
Antepartum hypertension (%)*	12/64 (19)	9/87 (9)
Proteinuria (%)*	14 (16)	7 (8)
Previous abruptio placentae causing stillbirth	4	3
Vaginal flora*		
Type I (%)	36/59 (61)	42/87 (48)
Type II (%)	11/59 (19)	20/87 (23)
Type III (%)	12/59 (20)	25/87 (29)
Unknown	31	3

*Since many patients were unbooked, data for all patients were unavailable.

TABLE II. COMPARISON BETWEEN STUDY ($N = 90$) AND CONTROL ($N = 90$) GROUPS — FACTORS THAT DIFFERED SIGNIFICANTLY

	Abruptio placentae (%)	Control group (%)	P value
Unmarried	57 (63)	44 (49)	$< 0,05$
Cigarette smoking	60 (67)	44 (49)	$< 0,05$
No antenatal care	16 (18)	1 (1)	$< 0,01$
Coitus within 48 hours of admission	19 (21)	3 (3)	$< 0,005$
Intrapartum hypertension	24 (27)	11 (12)	$< 0,05$

TABLE III. COMPARISON BETWEEN STILLBIRTHS ($N = 35$) AND LIVEBIRTHS ($N = 55$) IN PATIENTS WITH ABRUPTIO PLACENTAE

	Stillborn (%)	Liveborn (%)
Unmarried	21 (60)	36 (65)
Cigarette smoking	27 (77)	33 (60)
No antenatal care	8 (23)	8 (15)
Coitus within 48 hours of admission	8 (23)	11 (20)
Intrapartum hypertension	9 (26)	15 (27)

Discussion

In abruptio placentae there is great risk for the fetus. This was demonstrated by the finding that it caused intra-uterine death of the fetus in 39% of the patients in the study group. In this study factors such as maternal age, parity and gravidity did not seem to play a role in the epidemiology of abruptio placentae. The incidence of previous episodes of abruptio placentae in both groups of patients was similar. This is in contrast with reports in the literature which regard previous abruptio placentae as an important risk factor.[8-10] Threatened abortion and anaemia were found more frequently in the abruptio placentae group of patients but the difference was not statistically significant. Both antepartum and intrapartum hypertension occurred more frequently in the abruptio placentae group of patients but significance was reached only for the intrapartum hypertension. Intrapartum hypertension, however, should preferably not be regarded as a risk factor because the loss per vagina of a small or moderate amount of blood may cause modest transient hypertension.[10]

Of patients who developed abruptio placentae 63% were unmarried in comparison with 49% in the control group. It is unlikely that marital status could influence the incidence of abruptio placentae but it could possibly reflect the fact that patients who had abruptio placentae were more promiscuous. That 18% of the abruptio placentae group received no antenatal care although most came from areas quite near to the hospital's antenatal clinics and midwife obstetric units further confirms the importance of socio-economic factors. It is unrealistic to surmise that antenatal care as such could prevent abruptio placentae although the early admission of patients with pre-eclampsia or hypertension could play a minor role. The fact that there was suboptimal weight gain in patients with abruptio placentae also infers a nutritional aetiology for this condition.[11,12]

Cigarette smoking was also associated with abruptio placentae, confirming the work of Naeye et al.[12] Smoking causes endothelial cell changes which subsequently create

death than in the control group. In cases of intra-uterine death the abruption involved 66% of the placental surface but only 30% when the fetus survived. Dubowitz scores could not be done on stillborn babies. Scores were done in 39 infants who survived the episode of abruption and in 47 of the control group. Of these 16 (41%) in the study group and 7 (15%) in the control group were growth-retarded.

TABLE IV. COMPARISON OF FETAL AND PLACENTAL FINDINGS IN STUDY AND CONTROL GROUPS

	Abruptio placentae with intra-uterine death ($N = 35$)	Control ($N = 35$)	Abruptio placentae liveborn ($N = 55$)	Control ($N = 55$)
Birth weight (g)	$1\,976 \pm 707$	$3\,079 \pm 512$	$2\,240 \pm 804$	$3\,037 \pm 522$
Placental weight (g)	449 ± 142	571 ± 50	523 ± 169	558 ± 118
Sex				
Male (%)	20 (57)	18 (51)	29 (53)	27 (49)
Female (%)	15 (43)	17 (49)	26 (47)	28 (51)
Cord length (cm)	45 ± 12	52 ± 9	42 ± 10	50 ± 11
Abruption area (%)	66	—	30	—
Intra-uterine growth retardation (%)	—	—	16/39 (41)	7/47 (14)

rigidity of the arteriolar walls and vasoconstriction with placental underperfusion.[13,14] This may then cause ischaemia of the decidua basalis with eventual decidual necrosis and haemorrhage.

Significantly more patients who developed an abruption had had coitus within 48 hours of admission, again confirming the findings of Naeye.[15] There is a strong association between coitus and deciduochorio-amnionitis; it is possible that the haemorrhage may result from the fragile decidua.[16,17] Another possible mechanism by which coitus may cause abruptio placentae is through orgasmic uterine contractions which may lead to intra-uterine hypoxia.[18] The high incidence of coitus in the 48 hours preceding admission may, however, be a reflection of a patient's way of life and attitude towards her health and not a direct cause of abruptio placentae. Another interesting finding was that abruptio placentae was associated more with male babies (again confirming a previous study by Naeye et al.[12]).

The fact that the size of the abruption was larger in the intra-uterine death group shows that this is an important factor influencing perinatal mortality.

In the study group 41% of liveborn babies were growth-retarded in comparison with 14% in the control group. However, only babies who survived the abruption were assessed for growth retardation. It is highly unlikely that the incidence of growth retardation was lower among the fetuses where the abruptio placentae had caused intra-uterine death. The higher incidence of growth retardation in the study group suggests that abruptio placentae does not develop as an acute process but that underlying abnormalities in the placenta can be present for several weeks or months.

This study confirmed that certain patients at risk for abruptio placentae can be identified and should be warned against avoidable risk factors such as coitus and smoking of cigarettes. At-risk patients should also be explicitly informed about the signs and symptoms of abruptio placentae and should be instructed to seek medical care immediately if it is suspected.

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News and Comment/Nuus en Kommentaar

Adverse effects of natural medicines

We are told by proponents of natural medicine that, unlike orthodox medicine, the techniques and the preparations used have no adverse effects. There are two reasons why this myth is perpetuated. The first is that the patients who do develop adverse effects are loth to tell their general practitioner that they have been to a practitioner of 'natural medicine'. The second is that obviously practitioners of natural medicine do not publicise any adverse effects that may arise.

Two good illustrations of this have recently appeared in the medical press. The first was a report of 3 cases of severe skin eruptions due to 'natural' products, including the sad story of a foolish person who went to a health boutique in England for a tonic. He was offered some pills called 'Golden Health Blood Purifying Tablets', which on later analysis were shown to contain a number of herbal preparations. After taking the tablets for a week he had to be admitted to hospital with a severe skin infection resembling Stevens-Johnson syndrome. Time spent in hospital resolved his problem satisfactorily, but he was foolish enough to decide to take some more of the tablets a few months later. The result was predictable and he found himself back in hospital again. (Monk, Br Med J 1986; 293: 665).

The second report is even more instructive. A group of Danish physicians (Ibsen et al., Ugeskr Laeger 1987; 149: 1246) report 4 cases, 3 in women and 1 in a child, where patients became disillusioned with the orthodox treatment for atopic dermatitis and turned to natural medicine. All 4 patients had to be admitted to hospital as emergencies. The first had a widespread bullous impetigo with a positive culture for haemolytic streptococci and was severely ill and febrile, while the other 2 adults had erythrodermia, in one case with universal oedema and in the other with some skin necrolysis; the fourth patient, a 4-year-old child, had an extremely severe eczematous and infected skin rash. All the patients did well on hospital treatment with antibiotics and local measures.

In each case the patient had been told to stop the orthodox medication while in 2 cases the worsening of the skin condition was attributed by the unorthodox practitioner to a need 'for the poison to work itself out of the skin'.

Now it is well known that atopic dermatitis is a virtually incurable condition with its ups and downs, and it is natural for such patients to be dissatisfied with orthodox treatment unless their condition is fully explained to them and they accept the explanation. However, in each case stopping orthodox treatment and substituting a treatment with bizarre diets and a variety of unspecified herbal preparations led to rapid worsening of the condition; admission to hospital and resumption of othodox treatment produced equally rapid improvement.