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Research Article

Abruptio Placentae: Role of the Uterine Hypertonia in the Prediction of the Gravity of the Picture

Ricardo Illia*

Buenos Aires University Fellow ACOG, Chief of Obstetrics Service Hospital Alemán Buenos Aires, Argentina

***Corresponding Author**: Ricardo Illia, Buenos Aires University Fellow ACOG, Chief of Obstetrics Service Hospital Alemán Buenos Aires, Argentina.

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Abstract

Placental Abruption (PA) is a serious complication of pregnancy and is one of the important causes of bleeding during the second half of pregnancy [1]. Its frequency ranges from 0.5 to 3% and is the cause of about 25% of all perinatal deaths [2]. It could be seen a strong relationship between the severity of the PA and the extension of the area of placenta detached with the start of labor and the presence of uterine hypertonia. Our objetive was to analyze the association between the presence or absence of uterine hypertonia and metrorrhagia as a predictor of PA of more than 50% of the placenta. The conclusions were: Patients with PA, presented a significantly higher frequency of arterial hypertension, metrorrhagia and maternal anemia during the evolution of the pregnancy and during the second half of pregnancy. The PA was associated with an increase of 10 times the frequency of newborns of less than 34 weeks, 15 times the frequency of very low weight newborns, 10 times the frequency of of low weight newborns, 15 times of depression-major to the minute of life, 10 times of depression-major at the fifth minute of life, 10 times in the frequency of mortality fetal intermediate and 40 times in the frequency of mortality fetal late. Patients with more than 50% PA, showed a 3 times increase in the frequency of fetal mortality.

Keywords: *Placental Abruption; Uterine Hypertonia; Pregnancy*

Introduction

Placental Abruption (PA) is a serious complication of pregnancy and is one of the important causes of bleeding during the second half of pregnancy [1]. Its frequency ranges from 0.5 to 3% and is the cause of about 25% of all perinatal deaths [2].

Its etiology remains unknown, but there are several attributable causes, which include hypertensive disease of pregnancy, shortened umbilical cord, the presence of a uterine sudden decompression, deficiencies in folic acid intake and history of Placental Abruption in previous pregnancies [3]. Ananth., *et al.* [4] conducted a meta-analysis to evaluate the relationship between the PA and prolonged rupture of membranes and gestational hypertension. They found that the risk of PA is strongly associated with chronic high blood pressure, prolonged rupture of membranes and in particular the history of PA in a previous pregnancy. This last piece of information, seems to be very frequently associated with PA [5], bringing the incidence during the current pregnancy between 10 and 15 times.

Kramer., *et al*. [6] conducted a cohort study on 36875 birth, finding relationship as etiologic determinants of PA to the following factors: severe intrauterine growth retardation, prolonged rupture of the membranes, chorioamnionitis, bleeding, both gestational and pre-pregnancy hypertension, smoking, advanced maternal age, single mother and male fetal sex. Our group has also studied the problems surrounding the PA. In a recent communication on 111 cases of patients with PA [7], also found association with advanced maternal age. In addition, a significant increase in perinatal morbidity and mortality associated with the presence of PA was observed. In that study, it was observed that 82% of the cases of PA started before the onset of labour, being the most important sign the presence of uterine hypertonia,

followed by metrorrhagia and fetal distress. It could be seen a strong relationship between the severity of the PA and the extension of the area of placenta detached with the start of labor and the presence of uterine hypertonia.

Objective

Analyze the association between the presence or absence of uterine hypertonia and metrorrhagia as a predictor of PA of more than 50% of the placenta.

Material and Methods

We studied the protocols of 184 patients with PA assisted at our Hospital between 1990 and 2000. It was selected for its entry into the Protocol, patients with vivid description in the presence of variable percentage PA surgical record and the final report of anatomical pathology confirming the diagnosis. We assessed maternal epidemiological data (age, parity, presence of prenatal care), analyzed the frequency of maternal pathologies associated with the current pregnancy, mode of termination of pregnancy and perinatal morbidity and mortality data. The comparisons, were performed with the population general assisted in the Hospital, for what is selected the report of the system Perinatal Agustina corresponding to the patients assisted during the year 1996 (n: 7103). Finally, and according to what is set out in the report of the surgical record and pathological anatomy, samples were divided into patients with PA of one extension of less than 50% of the area of placental insertion (n = 50) and patients with an area of greater than 50% Placental Abruption. In these two groups of patients, we examined the incidence of complications according to the extension of the detachment, and the frequency with which associated the presence of bleeding and uterine hypertonia in each group.

The evidence of difference between proportions and Student T test were used for statistical analysis.

Results

In table 1, we can observe the maternal epidemiological data from patients with PA and its comparison with the general population (GP). There were among the groups significant differences between the percentages of patients younger than 20 years and over 35, while the frequency of patients 35 years or more is higher among the patients with PA. There were not differences in the percentage of patients nulliparous and multiparous groups. There were not significant differences regarding the greater percentage of patients without prenatal care in the PA Group (39.60% vs 16.06%, Dif.) Prop. P < 0.0001) and also was slightly higher frequency in patients with pathology associated with pregnancy between the PA (38%) and GP (27.66%) (P < 0.015).

Feature	PA		GP		P DIF. Prop.
	N	%	N	%	
< 20 years age	16	11.94	1171	16.69	0.189
Age > 35 years	20	14.92	691	9.85	0.084
Nulliparous women	46	32.10	1993	28.41	0.399
> = 3 births	43	30.00	2044	29.13	0.900
Control prenat. Yes	84	60.40	5963	83.94	< 0.0001
Control prenat. No	55	39.60	1141	16.06	< 0.0001
Mat. disease yes	49	38.00	1965	27.66	< 0.015
Mat. disease not	80	62.00	5138	72.34	< 0.015
	n: 184		n: 7103		

Table 1: *Characteristics of the group study and the population general.*

In table 2, is studied in detail the frequency of pathologies associated with pregnancy. As it was thought, the increased frequency of arterial hypertension associated with the PA group was statistically significant (22.28%) vs 6.84% in GP (P < 0.001). It was also statistically significant increased the frequency of bleeding among patients with PA (P < 0.001) and the presence of anemia (P < 0.001). There were no differences of significance with regard to the frequency of rupture of membranes, maternal age of 35 or more years and diabetes. Table 3 examines the form of termination of pregnancy, with a clear increase in the frequency of c-section in association with PA (86.9% vs. 20.06% in GP) (P < 0.0001).

Pathology	PA		GP		P Dif.Prop.
	N	%	N	%	
Mat hypertension	41	22.28	486	6.84	< 0.001
Hemorrhage	11	5.97	131	1.84	< 0.001
Membranes rupt.	11	5.97	352	4.60	0.487
Age > 35 years	20	10.86	691	9.72	0.697
Diabetes	8	4.34	349	4.91	0.857
Anemia	11	5.97	138	1.94	< 0.001
	n: 184		n: 7103		

Table 2: *Associated maternal pathology.*

Mode	PA		GP		P DIF. Prop.
	N	%	N	%	
Caesarean section	125	86.9	1425	20.06	< 0.0001
Spontaneous	18	12.5	5453	76,77	< 0.0001
Forceps	1	0.7	223	3.14	< 0.0001
	n: 144		n: 7101		

Table 3: *Mode of termination of pregnancy.*

Table 4 shows data related to perinatal morbidity and mortality. The frequency of newborn of less than 34 week´s gestational age was 24.06% in the Group PA and 1.95% in the GP (P < 0.001). The incidence of very low birth weight newborn was 18.84% in PA vs 1.32% in GP (P < 0.001) and similar relationship was observed with respect to the incidence of low birth weight newborns (PA 82.17% vs GP 8.41%) (P < 0.001). Also was greater in the Group PA the incidence of serious depressed newborns to the minute and to the fifth minute (P < 0.0001). The number of intermediate fetal mortality was higher among the patients with PA (3.80% vs. 0.36% in GP) (P < 0.0001) and late fetal mortality was higher among the patients with PA (30,43%) than in the GP (0.78%) (P < 0.0001).

	PA		GP		P
	N	%	N	%	DIF. Prop.
GA< 34 weeks	35	24.06	138	1.95	< 0.001
GA> 34 weeks	107	75.35	6928	98.04	< 0.001
< 1500g weight	26	18.84	94	1.32	< 0.0001
Weight < 2500g	72	82.17	598	8.41	< 0.0001
DEP. serious '	19	23.45	113	1.59	< 0.0001
DEP. serious 5'	4	4.93	32	0.45	< 0.0001
Intermediate fetal mortality	7	3.80	26	0.36	< 0.0001
Late fetal mortality	56	30.43	55	0.78	< 0.0001
	n: 144		N: 7102		

Table 4: *Data of the newborn.*

Table 5, analyses the characteristics, signs and symptoms and complications of patients with PA, depending on the percentage of Placental Abruption. Is observed an association statistically significant between the incidence of fetal mortality and greater area of placenta detachment (PA < 50% 22% vs PA > 50% 61.9%) (P < 0.001). There was no statistical difference between the frequency of caesarean, the presence of maternal diseases, the incidence of maternal hypertension (even though the percentage of patients with hypertension was higher among those with PA> 50%), the presence of bleeding as a sign associated with the PA, the incidence of acute fetal distress or the average maternal age. Uterine hyperton, had a rate of 46% when the PA was less than 50% and the 78.6% when the PA was greater than 50% (P < 0.0001). The presence of serious maternal complications such as hypovolemic shock and the need for a hysterectomy, only was observed in the case of AP greater than 50%.

	< 50%		> = 50%		P
	N	%	N	%	T Student
Fetal death	11	22.00	52	61.90	< 0.001
Caesarean section	46	92.00	79	94.00	0.928
Maternal disease	20	40.00	29	34.50	0.650
Maternal Hypertension	11	22.00	30	35.70	0.141
Hypertonia	23	46.00	66	78.60	< 0.0001
Metrorrhagia	38	76.00	60	71.40	0.704
Acute fetal distress	12	24.00	26	30.90	0.510
Maternal shock	-	-	4	4.70	
Hysterectomy	-	-	4	4.70	
Maternal age	26.7	+-7.3	28.8	+-6.8	0.188
	n: 50		n: 84		

Table 5: *Characteristics, signs, symptoms and complications according to the percentage of Placental Abruption.*

Discussion

In the present series, we have not been able to validate the associations of our previous study with respect to the increased frequency of advanced maternal age and multiparity with PA [7]. In the current study, although the frequency of patients with age of 35 or more years was higher among the patients with PA that in the GP, the differences did not reach statistical significance. It is likely that the increase in

the sample size in the current case, could have changed this result. This fact raises differences with previous assessments of other authors [4-6]. The increased frequency of maternal pathology associated with pregnancy between patients with PA was also different from our previous assessment. In the previous study, it was observed only a significant difference in favour of the presence of maternal hypertension, bleeding and premature rupture of the membranes. In this series, the significant differences associated with the presence of maternal hypertension, bleeding and anemia, as well as the global biggest maternal pathology in general in association with the presence of PA. We believe that these differences can also be explained by the change in the number of patients studied.

The impact of the PA on the newborn, can be deduced clearly analyzing perinatal outcomes of the patients studied. The frequency of newborns of less than 34 weeks of gestational age was 12 times higher among patients with PA, the frequency of very low birth weight newborn was 15 times higher and the newborn of low weight 10 times greater. The serious depressed to the minute of life were 15 times more among the newborns of mothers with PA and the serious depressed at the fifth minute were 10 times more. The incidence of intermediate fetal mortality was 10 times higher among patients with PA and the incidence of late fetal mortality increased 40 times in case of PA. These figures are more than eloquent in establishing the seriousness that has, within the spectrum of acute pathologies of pregnancy, Placental Abruption.

Finally, table 5 allows us to evaluate the characteristics, signs and symptoms and complications of the studied patients according to the percentage of detachment is higher or lower than 50%. As a new sign of the seriousness of the PA, fetal mortality in case of greater than 50% PA was 3 times higher than the mortality of less than 50% PA Group ($P < 0.001$). Only the patients with greater than 50% PA presented requirement of hysterectomy and hypovolemic shock. The only sign significantly related to increased area of PA was uterine hypertonia, which arose in 46% of cases of less than 50% PA and the 78.6% of the cases of greater than 50% PA ($P < 0.0001$). In contrast, metrorrhagia appears in 76% of cases of less than 50% PA and the 71.4% of cases of greater than 50% PA ($P = 0.704$) [8].

Conclusions

1. Patients with PA, presented a significantly higher frequency of arterial hypertension, metrorrhagia and maternal anemia during the evolution of the pregnancy and during the second half of pregnancy.
2. The PA was associated with an increase of 10 times the frequency of newborns of less than 34 weeks, 15 times the frequency of very low weight newborns, 10 times the frequency of of low weight newborns, 15 times of depression-major to the minute of life, 10 times of depression-major at the fifth minute of life, 10 times in the frequency of mortality fetal intermediate and 40 times in the frequency of mortality fetal late.
3. Patients with more than 50% PA, showed a 3 times increase in the frequency of fetal mortality.
4. Only the patients with greater than 50% PA, presented hypovolemic shock and required hysterectomy.
5. The only sign that was statistically associated with more than 50% PA was the presence of uterine hypertonia.

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