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Multi-Knowledge Electronic Comprehensive Journal For Education And Science Publications (MECSJ)

Issue (41),2021

ISSN: 2616-9185

Immediate Maternal and Fetal Outcome of Placental Abruption/Omdurman/SUDAN

(multicentric study)

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Multi-Knowledge Electronic Comprehensive Journal For Education And Science Publications (MECSJ)
Issue (41),2021
ISSN: 2616-9185
www.mecsj.com/

Abstract

Background: Abruption placenta is a challenging obstetric complication, contributor to perinatal and maternal morbidity and mortality. The underlying etiology remains unexplained, some identified risk factors are preventable or treatable.

Objectives: the aim of this investigation is determining immediate maternal and fetal outcome.

Methods: A multicentric cross-sectional hospital-based study (Omdurman Maternity, Al Saudi Maternity and Omdurman Military Hospital) during the period from June 2019–February 2020. The sample 385 pregnant women presented with placental abruption. Data collected using a questionnaire after informed consent. Data analyzed using Statistical Packages for Social Sciences version 23.0.

Results: The incidence of placental abruption is 0.96%, risk factors of placental abruption were commonly hypertensive disorders, no risk factor determined, premature rupture of membrane, abdominal trauma, previous abruption and non-vertex presentation. The prevalent mode of delivery was cesarean section, vaginal delivery, and induced vaginal delivery. Maternal complications of placental abruption were postpartum hemorrhage, shock, coagulopathy, renal impairment and hysterectomy. There was no maternal mortality. Neonatal complications were admission to neonatal intensive care unit, prematurity, fresh stillbirth, intrauterine growth restriction and early neonatal death.

Conclusion: Poor maternal outcome significantly correlated with cesarean delivery. Admission to neonatal intensive care unit and prematurity associated with cesarean delivery, while stillbirth and early neonatal death associated with induction and spontaneous vaginal deliveries. There is a need for more studies to enable stakeholder to establish protocols and policies.

Keywords : antepartum hemorrhage**,** Abruption placentae, Sudan and Africa.

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ملخص الدراسة:

الخلفية: ان انفصال المشيمة يعد من المضاعفات التوليدية الصعبة، ويساهم في المراضة والوفيات في الفترة المحيطة بالولادة. تظل الاساسية غير مفسرة، وبعض عوامل الخطر المحددة يمكن الوقاية منها اوعلاجها.

الاهداف: الهدف من الدراسة معرفة النتائج الفورية للام والجنين في هذه الحالات.

الطريقة: دراسة مستعرضة متعددة المراكز(مستشفي امدرمان للولادة، المستشفي السعودي للولادة ومستشفي امدرمان العسكري)خلال الفترة منةيونيو 2019 – فبراير 2020. عينة 385 امراة حامل تعرضن لانفصال الشيمة. تم جمع البيانات عبر استبيان بعد اخذ الموافقة المسبقة. وتم تحليل البيانات باستخدام الحزم الاحصائية للعلوم الاجتماعية الاصدار23.

النتائج: نسبة حدوث انفصال المشيمة هي 0.96%، وعوامل الخطورة كانت عادة اضطرابات ارتفاع ضغط الدم، ولم يتم ايجاد عوامل خطر، تمزق الاغشية المبكر، وصدمة في البطن وتاريخ انفصال من قبل. وتمت الولادة بالعملية القيصرية الاكثر حدوثا ثم الولادة المهبلية والمحرضة. كانت المضاعفات الامومية نزف بعد الولادة، الصدمة، اعتلال تجلط الدم، الفشل الكلوي واستئصال الرحم ولم تحدث وفيات امهات. المضاعفات الوليدية هي الدخول الي وحدة العناية الوليدية المركزة، الخداج، تقييد النمو داخل الرحم، املاص ووفيات الولدان المبكرة.

الاستنتاج: النتيجة الامومية السيئة مرتبطة بشكل كبير بالولادة القيصرية. دخول حديثي الولادة للعناية المركزة مرتبط بالولادة القيصرية، بينما الاملاص والوفاة المبكرة للمواليد مرتبط بالولادة المهبلية سواء كانت تلقائية او محرضة. هناك حاجة لمزيد من الدراسات لتمكين مقدمي الخدمة من وضع البروتوكولات والسياسات.

الكلمات مفتاحية: نزيف ماقبل الولادة، انفصال المشيمة، السودان، افريقيا.

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Introduction

Abruption placentae complicates 1% of all pregnancies, sixty percent are serious, which associated feto-maternal morbidity and mortality.(Ruiter, Ravelli, De Graaf, Mol, & Pajkrt, 2015)

The etiology of placental abruption not recognized, However, smoking, cocaine use, age over 35, hypertensive disorder, previous abruptio, multiple gestation, polyhydramnios and abdominal trauma.(Martinelli, Garcia, Santos Neto, & Gama, 2018) majority abruptio occur before 37-weeks' . abruption puts the lady at risk for hemorrhage, hysterectomy, disseminated intravascular coagulopathy, renal failure and pituitary ischemia. (Sylvester & Stringer, 2017) Neonatal complications include prematurity, low birthweight, perinatal asphyxia, stillbirth and neonatal death. The rising incidence, despite improved obstetrical care, suggests a multifactorial etiology(Miller et al., 2019). ultrasound can exclude placenta previa, However, it takes little sensitivity to detect abruption. The onset of placental separation is often unpredictable and necessitate immediate treatment.

Early pre-eclampsia managed conservatively carries 4% risk of abruption (5), also, the MTHFR 677C > T polymorphism may have a role in IUGR and abruptio placentae. (6)

There is increasing evidence that risk factors are changing, some risk factors independently associated with abruptio as; Advanced maternal age, unexplained bleeding during pregnancy, preeclampsia and placenta previa. (7) environmental pollution incriminated in abruptio as increased $PM_{2.5}$ and NO_2 during 3^{rd} and 1^{st} t respectively related to significant rates of placental abruption postulating that exposure may be a trigger in various ways to abruption.(Huang et al., 2020)

Few studies addressed maternal and fetal outcome associated with placental abruption in Sudan. this study carried out in three tertiaries' hospitals (Omdurman Maternity, Al Saudi Maternity and Omdurman Military) To determine morbidity, maternal mortality, identify fetal outcome and correlate between fetal and maternal outcome to the mode of delivery in women with placental abruption.

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Method

This is cross sectional, multicentric, hospital-based study conducted during the period from June 2019–February 2020 at three tertiary hospitals (Omdurman Maternity Hospital, Omdurman Military Hospital and Al Saudi Maternity Hospital).

All pregnant women with abruptio placentae presented during the period of study and fulfilling inclusion criteria. Participants evaluated and dealt with by senior obstetrician

The study sample size worked out utilizing this formula: N0 =Z2PQ /D2 N= sample size Z=constant 1.96 Q=1-P P=degree of accuracy (50%) D=0,05 (sample size =385). Data Gathered by specific and designed questionnaire. The gathered data studied by computer using statistical package for social science (SPSS), the results stated in tables. Comparison between subgroups using- Analytic statistic: Chi-square test and P- values of less than 0.05 at 95% confidence level deemed statistically significant.

Ethical approval: received from Sudan Medical Specialization Board, Council of Obstetrics and Gynecology and administrators of the hospitals. A signed consent collected from all participants.

Conflict of interest: no

Results & Discussion

In this study 385 women with placental abruption enrolled, the incidence of abruption is 0.96%, table (1) demonstrates demographic characteristic; 81.65 of the ladies aged between 20-39 years, 73.5% are multiparous ladies and 59% of the babies were preterm between 24-36 weeks. Risk factors of placental abruption were hypertensive disorders 203(52.7%), PROM 52(13.2%) abdominal trauma 39(10.1%), previous abruption 24(6.2%) and non-vertex presentation 1(0.3%) table (2). Maternal outcome of placental abruption was PPH 229(59.5%), shock 156(40.5%), coagulopathy 67(17.4%), renal impairment 19(4.9%) and ICU admission 19(4.9%) and hysterectomy 3(0.3%). There was no maternal mortality table (3). It is clear from Table (4) poor outcome of placental abruption such as PPH, shock, renal impairment and ICU admission significantly associated with CS (P value < 0.05). Poor neonatal outcome in terms of low Apgar score, NICU and prematurity were significantly stronger among the women delivered by CS, while still birth correlated with induced mode of delivery and early neonatal death associated with normal vaginal delivery (P value < 0.05) table (5).

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Table (1) illustrate demographic characteristics

Age	<20 years	20-29 years	30-39 years	>40 years
Percentage	11.2	54.5%	27.1	7.2
Gestational age	24-33^{+} weeks	34-36 $^{+}$ weeks	Term	
Percentage	32%	27.5%	41%	
Parity	primigravida	Multiparous	grand multiparous	
Percentage	26.5%	56.9%	16.6%	

Table (2) Distribution of women according to risk factors (n=385)

	No risk	HTN disorder	Previous abruption	Abdominal trauma	PROM	Non vertex presentation
Number	66	203	24	39	52	1
Percentage	17.1	52.7	6.2	10.1	13.5	0.4

Table (3) Distribution of women according to maternal complications

	PPH	hysterectomy	shock	coagulopathy	Renal impairment	ICU admission	death
Number	229	3	156	67	19	19	0
percentage	59.5	0.8	40.5	17.4	4.9	4.9	0

Table (4) Distribution of women according to maternal complications in relation to mode of delivery

	PPH	Shock	coagulopathy	Renal impairment	ICU admission
SVD	55	28	0	0	0
induced	77	22	0	0	0
C/S	97	106	67	19	19
P Value	0.032*	0.017*	0.001*	0.001*	0.001*

* Significant (P value < 0.05)

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Table (5) Distribution of women according to neonatal outcome in relation to mode of delivery

	Apgar < 7 at 5 minutes	NICU admission	Prematurity	IUGR	Still birth	Early neonatal death
SVD	30	30	22	17	12	9
Induced	21	42	21	0	12	0
CS	100	150	103	20	26	0
P value	0.013*	0.016*	0.011*	0.024*	0.029*	0.001*

* Significant (P value < 0.05)

Discussion

In our study 81.65% between 20-39 years, 73.5% are multiparous ladies and 59% of the babies were preterm between 24-36 weeks. This agrees with another study as they observed 46% of the patients between 18-35 years, 58% of the babies were preterm.(Mohammed & Muharram, 2015)

The incidence in our study is 0.96% which is lower than what concluded in Sudan, size sample and duration may explain this as there is seasonal variation. In Sudan it was (6.5%).(Dafallah & Babikir, 2004) but our findings agree Nigeria(Igwegbe, Eleje, & Okpala, 2013)

In our study hypertensive disorders were (52.7%), PROM (13.2%) which is like found in Taiwan which concluded preeclampsia and premature rupture of membrane.(Li, Tian, Liu, Chen, & Wu, 2019) the same risk factors also found in Nigeria.(Akadri, Ogunsowo, & Odelola, 2018)

Our study showed a considerable incidence of PPH (59.5%) when measured to Nigeria which is (34.7%) this explained by criteria and local protocols for the diagnosis and management of PPH in our institutes, and underestimation of blood loss could interpret this difference, however, we have no maternal mortality, but in Nigeria there was two maternal deaths. (10)

To our knowledge there is no study compared maternal and neonatal outcome in relation the mode of delivery in our research; low Apgar score, NICU and prematurity were significantly higher among the women delivered by caesarean section, while still birth associated with induced vaginal delivery and early neonatal death associated with normal vaginal delivery, the tendency to deliver abruption vaginally in our country may interpret these finding. Also, poor outcome of placental abruption such as PPH, shock, renal impairment and ICU admission significantly associated with caesarean section P value < 0.05.

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Conclusion

Poor maternal outcome significantly correlated with cesarean delivery. Admission to neonatal intensive care unit and prematurity associated with cesarean delivery, while stillbirth and early neonatal death associated with induction and spontaneous vaginal deliveries. There is a need for more studies to enable stakeholder to establish protocols and policies.

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