

## ORIGINAL RESEARCH ARTICLE

# Diagnosis of Ruptured Ectopic Pregnancy is still a Challenge in Eastern Sudan

AbdelAzem A Ali<sup>a\*</sup>, Tajeldin M. Abdallah<sup>b</sup> and Mohammed F Siddig<sup>b</sup>

Faculty of Medicine, Kassala University, Sudan

\*For correspondence: Email: abuzianab73@yahoo.com Tel: +249912163820 Fax: +249411823501

## Abstract

This was a cross sectional prospective study carried out in Kassala Maternity Hospital, Eastern Sudan (2008-2011) to investigate the incidence rate and factors associated with delayed presentation in ruptured ectopic pregnancy. The total number of deliveries during the study period was 9578. The total number of ectopic pregnancy was 199 yielding an incidence rate of (1 in 48 deliveries or 20.7 per 1000 deliveries). One hundred eighty six (93.5%) out of these were ruptured ectopic reflecting very low rate of diagnosis (6.5%) before rupture occurred. Maternal education  $\leq$  secondary, parity and history of subfertility were associated with ruptured ectopic pregnancy ( $P = 0.00, 0.003$  and  $0.00$  respectively). The causes of delay reported by the patients include: 64.5% not aware of the pregnancy, 28% have been seen by health provider but reassured and 7.5% regarded the symptoms not serious enough to ask for care (*Afr J Reprod Health 2011; 15[4]: 106-108*).

## Résumé

**Le Diagnostic de la rupture de la grossesse ectopique demeure toujours un défi au Soudan de l'Est.** Il s'agit d'une étude prospective transversale qui a été menée dans la Maternité Kassala, au Soudan de l'Est (2008 -2011) afin d'étudier le taux d'incidence et les facteurs liés à la présentation retardée dans la rupture de la grossesse extra-utérine. Le nombre total des accouchements pendant la période était 9578, ce qui a donné un taux d'incidence de 1 accouchement sur 48 soit 20,7 sur 1000 accouchements. 186 (93,5%) parmi eux étaient des ruptures extra-utérines qui reflètent un taux de diagnostic très bas (6,5%) avant la rupture. L'éducation maternelle  $\leq$  secondaire, la parité et un passé de sous stérilité ont été liés à la rupture de la grossesse extra-utérine ( $P=0,00, 0,003$  et  $0,00$  respectivement). Les causes du retard signalés par les patientes comprennent : 64,5% n'étaient pas conscientes de la grossesse, 28% se sont passés de voir le dispensateur de soins et 7,5% n'ont pas considéré que les symptômes étaient assez sérieux pour rechercher le traitement (*Afr J Reprod Health 2011; 15[4]: 106-108*).

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**Keywords:** Ectopic pregnancy, Diagnosis, Hemorrhage, Sudan

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## Introduction

Ectopic pregnancy remains the most common cause of maternal mortality in the first trimester of pregnancy<sup>1</sup>. Approximately 1-2% of all pregnancies in the USA and Europe are ectopic, in contrast to the much higher incidence rate that occurs in the developing countries<sup>2,3</sup>. Among every ten women admitted with ectopic pregnancy in the developing world there is one maternal death<sup>4</sup>. Sudan, which is a largest country in Africa with more than 33 million inhabitants, has one of the highest rates of maternal mortality<sup>5</sup>. In spite of this, there is little published data regarding the diagnosis of unruptured ectopic pregnancy. Investigating the incidence rate and factors associated with delayed presentation of ectopic pregnancy is fundamental to

provide care giver and health planners with basic data necessary for the intervention measures.

## Methods

This was a cross sectional prospective study carried out in Kassala Maternity Hospital over three years duration (2008-2011) to investigate the incidence rate and factors associated with delayed presentation in ruptured ectopic pregnancy. Kassala, Eastern Sudan, is 42282 square kilometers, populated by 1.8 million with 440491 women in reproductive age and it is nearly 600 kilometers from Khartoum, capital of Sudan. Structured questionnaires were used to gather data from women who presented to Kassala Maternity Hospital with ectopic pregnancy. All women gave informed consent, interviewed between the 3<sup>rd</sup> and 5<sup>th</sup> postoperative day to

supplement the data needed for analysis. These data include sociodemographic characteristics (age, residence, educational level...ect) factors associated with delayed presentation (reassurance by health provider, pregnancy unawareness, negligence of the symptoms, etc), desire to have more children, health facility attendance before hospital arrival and whether the ectopic pregnancy was ruptured or not at the time of surgery.

Data were entered into a computer database and SPSS software (SPSS Inc., Chicago, IL, USA, version 13.0) and double checked before analysis. Means and proportions for the socio-demographic characteristics were compared between those who presented with ruptured and intact ectopic pregnancy using *t* test and  $\chi^2$  test, respectively.  $P < 0.05$  was considered significant.

The study received ethical clearance from the Health Research Board at the Ministry of Health, Kassala State, Sudan.

## Results

The total number of deliveries at Kassala Maternity Hospital during the study period was 9578. The total number of ectopic pregnancy was 199 yielding an incidence rate of (1 in 48 deliveries or 20.7 per 1000 deliveries). One hundred eighty six (93.5%) out of these were ruptured ectopic reflecting very low rate of diagnosis (6.5%) before rupture occurred. The mean ( $\pm$  SD) age and parity of these 199 patients was 27.9 ( $\pm$  6.3) and 4.9 ( $\pm$  2.6) respectively and the duration of amenorrhea ranged from 5-15 weeks. Ninety eight percent (195\199) of these women desired to have more children and 92% (183\199) not yet aware of the pregnancy. Among those with ruptured ectopic 28% (52\186) attended a health facility before the event, 5.9% (11\186) performed urine or serum for  $\beta$  HCG and 59.6% (8\186) performed ultrasound scan however it worthy to note that 55.3% (103\186) of those who had ultrasound scan done were seen later at the gynecological department with hypovolaemic shock as a result of ruptured ectopic pregnancy. There was no significant difference in the age and residence between those who presented with ruptured and intact ectopic pregnancy however maternal education  $\leq$  secondary, parity and history of subfertility were associated with ruptured ectopic pregnancy ( $P = 0.00$ , 0.003 and 0.00 respectively), Table 1. The causes of delay reported by the patients include: sixty four point five percent (120\186) not aware of the pregnancy, 28% (52\186) have been seen by health provider but reassure and 7.5% (14\186) regarded the symptoms not serious enough to ask for care. We have 98 cases transfused by

at least 2 units of blood and one maternal death due to ectopic pregnancy.

**Table 1:** Comparison between ruptured ectopic pregnancy at Kassala Hospital, Eastern Sudan 2008-2010

Variable	Ruptured ectopic (N=186)	Unruptured ectopic (N=13)	P
Age, years	27.8(6.3)	30.3 (6.7)	0.2
Parity	5.1(2.6)	2.8(2.3)	0.003
Rural residence	116 (62.4%)	7(53.8%)	0.5
Education, $\leq$ secondary	142 (76.3%)	3 (23.1%)	0.00
History of subfertility	10 (5.4%)	6 (46.2%)	0.00

## Discussion

The current study showed a high incidence rate of ectopic pregnancy (1 in 48 deliveries or 20.8 per 1000 deliveries) in this region of Sudan. The incidence rate described by this study (20.8 per 1000 deliveries) is not far away from the wide range of rates reported in studies from other developing countries (1 in 21 deliveries to 1 in 44 deliveries) <sup>6</sup>. It might not be valid to compare our results with results in the developed countries where there are facilities for early diagnosis such as serum  $\beta$  HCG, high resolution ultrasound scan and laparoscopy <sup>7</sup>. Kassala Maternity Hospital is the only referral hospital in Eastern Sudan, together with increasing rate of infections, in this part of Sudan, that might damage the uterine tubes (in particular tuberculosis) may have contributed to this high rate of ectopic pregnancy <sup>8</sup>.

In this setting there is very low rate of diagnosis of unruptured ectopic pregnancy, only 6.5% before rupture occurred. This finding is consistent with other African countries for example Ghana (5.43%) <sup>6</sup>. The early diagnosis of ectopic pregnancy before rupture obviates the need for blood transfusion with its associated risk. It is not surprising that 98% of the affected women desired to have more children. This is consistent with what was recently reported in Eastern Sudan which showed low use of contraception <sup>9</sup>. Education had been reported as a predictor for poor maternal outcomes <sup>10</sup>. Therefore reduction of the present high rates of ruptured ectopic pregnancy and early diagnosis before rupture may be achieved by encouragement of public education. It is very important to point that 28% of the cases initially visited a health facility when they suffered from minimal vaginal bleeding and lower abdominal pain, thus it is imperative that action to be taken to improve the rate of diagnosis among health providers. The health personnel should constantly think about the possibility of ectopic pregnancy in patients presented with lower abdominal pain. Reminding and

training programmes in emergency obstetric care should always be adopted by reproductive Health Department in the Ministry of Health. Moreover establishment of serum or urine  $\beta$  HCG at the level of the primary health facilities may increase the rate of diagnosis of ectopic pregnancy before rupture occurs.

The effect of mothers' parity and subfertility on the diagnosis of ruptured ectopic pregnancy could be because of time management, limited resources in the family and negative perceptions resulting from previous pregnancies and extended family. It is possible that multiparous mothers, who have greater experience, feel more confident when they miss their periods and consider early antenatal attendance and booking less important.

One of the major limitation of our study the social and economic status were not investigated (because of technical difficulties) since there is fluctuation in daily incomes.

## Conclusion

There is high incidence rate of ectopic pregnancy and low rate of diagnosis before rupture occurs in eastern Sudan. Almost one third of the patients had been seen by health care providers before the event. Maternal education  $\leq$  secondary, parity and history of subfertility were associated with ruptured ectopic pregnancy. There should be more efforts to encourage the level of education and improve the rate of diagnosis among health care providers before the occurrence of rupture.

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