In the name of God

S.U.M.S.

Department of Internal Medicine

Shiraz E-Medical Journal

Vol. 7, No. 4, October 2006

http://semj.sums.ac.ir/vol7/oct2006/burn.htm

Burn During Pregnancy, A Five Year Survey to Assess Maternal and Fetal Mortality.

Ghotbi Sh *, Beheshti M**.

*Assistant Professor, Department of Obstetrics and Gynecology, and ** Family Physician, Fasa Medical School, Fasa, Iran.

Correspondence: Dr. Shahrzad Ghotbi, Department of Obstetrics and Gynecology, Fasa Medical School, Fasa, Iran, Tel.: +98(731) 222-1172, E-mail: shahrzad.ghotbi@gmail.com

Received for Publication: May 7, 2006, Accepted for Publication: September 25, 2006.

Abstract:

This a retrospective study performed in Dr. Shariati hospital, Fasa, Southern Iran on pregnant women referred due to burn. Most burns had happened in the second trimester, maternal and fetal mortality were 40.7% and 48.1% respectively. 59.9% of victims were from low socioeconomic class and 23% of them were burned due to suicidal attempts. This study concludes that maternal and fetal mortality is determined by total burn surface area, degree of burn, presence of pregnancy, availability of care facilities and time elapsed between burn and hospital admission. It is also concluded that pregnancy increases the maternal mortality rate in burn.

Key Words: Pregnancy, Burn, maternal Mortality, Fetal Mortality.

Introduction:

Despite relatively high incidence of burn in the developing countries and its importance in the pregnancy, there are only a few reports, which have studies different aspects of this problem. In the previous studies, there is also a controversy regarding the outcome of burn between pregnant and non-pregnant victims; some have concluded that pregnancy does not increase the maternal mortality rate in burn patients and some other have reverse results. The present study was designed both to determine the incidence of burn in pregnant women in patients referred to Dr. Shariati hospital and also to investigate the mentioned controversy. Existance of this controversy, necessitates some prospective and interventional studies to be performed to clearly define the protocols that should be obeyed when a pregnant woman refers to hospital because of burn. It seems that the most important decision to be made is whether the pregnancy should be terminated or not.

It should be remarked that Dr. Shariati hospital is a university affiliated and the only hospital in Fasa, southern of Iran and patients of a population more than 450'000 urban and rural societies are referred to it. Relatively high percent of

27 (10.6%) of burned women aged between 15 and 35 years old were pregnant (6.8% of all women). 93 (23%) of women were burned because of suicidal attempts. During pregnancy, the patient referring to this hospital are from rural regions of Fasa and of low to mid socioeconomic state.

Materials and Methods:

This is a retrospective study. 1448 patients were admitted to Dr. Shariati hospital (Fasa, southern Iran) between 2000 and 2005 because of burn. Data used in this study have been gathered from the files of the patients. All of burned women have been included and no exclusion criteria was used. Burn types other than flame burns and boiling water burns such as electrical and chemical burns have been referred to other hospitals in greater cities and so had no file in Dr. Shariati Hospital. Incidence of burn during pregnancy, etiology, gestational age, total burn surface area, fate of pregnancy, duration of hospitalization and the relationship between mentioned items were studied. SPSS Software (version 13) was used for statistical assessment.

Results:

From 1448 cases of burn, 640 (44.3%) were in childhood age, 416 (28.7%) were adult males and 392 (27.0%) were adult females. The ages of women involved were between 14 and 90 year old (table 1).

etiology of burn and total burn surface area (TBSA) are summarized in table 2 and 3 respectively.

Table 1, Age distribution of burned females.

Age	Number	Percent
< 15	43	10.9
15-35	258	65.8
>35	91	23.3

Table 2, Etiology of burn during pregnancy.

Cause	Number	Percent
Flame	23	85.1
Boiling Water	4	14.9

Table 3, Total burn surface area distribution during pregnancy.

TBSA	Number	Percent
< 30%	12	44.5
30 – 50%	7	25.9
50 – 70 %	4	14.8
> 70%	4	14.8

Gestational ages were as 5 (18.5%): first trimester, 15 (55.5%): second trimester and 7 (26%): third trimester. Eight (29.6%) were primigravid and 19 (70.4%) were multigravid.

Fetal assessment: 13 (48.1%) women had dead fetus during hospitalization and 14 (51.9%) discharged with alive fetus. Gestational ages of those who had fetal death and those whose fetuses survived are abstracted in table 4 and table 5. All of mothers with fetal death had TBSA of more than 40%. In the other group (discharged with alive fetus), one aborted the fetus within one month of burn, 11 had normal vaginal deliveries (one still birth without definite cause) and 2 had cesarian section due to obstetric indications. Ten (76.9%) of fetal deaths happened when the mother was still alive and in three (23.1%), fetal death happened with or soon after maternal death. Most of fetal deths happened in the first days after the burn. The most common cause of fetal death was decreased utrine and placental circulation. Four mothers (30.8%) who had fetal death, had no burn in the genital area.

Table 4, Distribution of gestational ages of died fetuses.

Gestational Age	Number	Percent
First Trimester	4	30.8
Second Trimester	7	53.8
Third Trimester	2	15.4

Table 5, Distribution of gestational ages of survived fetuses.

Gestational Age	Number	Percent
First Trimester	2	14.2
Second Trimester	8	57.4
Third Trimester	4	28.4

Eleven mothers died as a result of burn, which all of them had third degree burns and distribution of the TBSA of died mothers is summarized in table 6. This table also shows that every mother who had a TBSA of more than 50 % died in the hospital course. Duration of hospitalization was between 1 to 120 days (mean 21.12 days). 16 (59.9%) were from low, 9 (33.3%) from mid and 2 (6.8%) from high socioeconomic classes.

The most common cause of death of mothers was sepsis which had symptoms such as hypothermia, leukopenia, thrombocythopnea, hypotention and decreased urine output.

Hemodynamic stabilization, antibiotics, tetanus prophylaxis, wound care, and fetal assessment were performed.

Table 6, Total burn surface area distribution of dead mothers.

TBSA	Number	Percent
< 30%	1	9.0
30 – 50%	2	18.2
50 – 70 %	4	36.4
> 70%	4	36.4

Discussion:

Importance of burn during pregnancy is well defined [1]. Matheus et al [14] once recommended that pregnancy should be terminated in every woman if the burn has happened in the second or third trimesters, because the impact of burn during pregnancy would lead to high mortality rate of mothers, additionally, postponement of delivery will not increase the vitality of the fetus. In contrast, Amy et al [10] and Akhtar et al [11] concluded that maternal mortality because of burn during pregnancy is similar to non pregnant patients, and so early treatment of burn (e.g.; hemodynamic stabilization and skin graft) are the most important interventional factors affecting the outcome of the burn during pregnancy.

In our study, we concluded that pregnancy increases the mortality of burned women. In the other hand, there is a direct relationship between total burn surface area (TBSA) and fetal vitality: Fetal mortality is about 50% when the TBSA is

30%, so if the chance of fetal vitality is more than 50%, early delivery should be performed.

In the study of Akhtar et al [11], which studied 50 burned pregnants and compared them with 50 non-pregnant women and 50 uncomplicated pregnant burns, it was concluded that the TBSA is only statistically important factor that affects the prognosis of the mother and fetus. However, in our study, it is showed

that presence of pregnancy is also important to predict the outcome of the mother and child.

The other concept that in every study is confirmed is the grave effects of burn on the fetus that may lead to abortion or preterm delivery. Factors that are involved in this process include TBSA, hypovolumia, septicemia, pulmonary injuries, severe catabolism, hyponatremia, side effects of drugs and increased prostaglandins (which happen in the first week after the burn).

It is also demonstrated that hypotension may lead to abortion or fetal death even in degrees of blood pressure, which are usually tolerable by non-pregnant individuals [13]. Hence, it necessitates the precise hemodynamic stabilization of the burned pregnant mothers.

The fetal effects of the drugs used for control of sepsis, anaesthesia and so on, is not considered in this study, and because of their potentially risky effects, needs separate researches.

References:

1. Lippin Y; Therapeutic abortion in severely burned women; J Burn Car Rehabil, 1993, May-Jun 14(3): 398-405.

2. Mabogunjc OA, Burn injury during pregnancy; J Notl Med Assoc: 1990, Sep 89(9): 641-4.

3. Widgerow AD, Ford TD, Botha M; Burn contracture preventing uterine expansion; Ann Plastic Surg, 1991, Sep 27(3): 296-71.

4. Mc Calvey RL, Stenburg PA, Philips LG: Long term assessment of the effects of circumferential truncal burns in pediatric patients on subsequent pregnancies, J Burn Care Rehab; 1991: Jan 12(1):51-3.

5.Khadzhiski S; Burn during pregnancy; Sofia Med J;1999 52(3): 26-9.

6. Gang RK et al: Management of thermal injury in pregnancy, analysis of 16 patients. Burns; 1992 Aug 18(4): 317-20.

7. Barillo DY, Nangel ME, Farrel K: Preliminary experience with cultured epidermal autografts: J Burn Care Rehab; 1991, Jan-Feb 13(1):138-165.

8. Digregorio VR: Two unusual post burn reconstructions using tissue expansion: Ann Plastic Surgery; 1993, Jun 30 (60), 276-81.

9. Schneider H: Trauma and pregnancy; Arch Gyn Obst, 1993, 253: supplement:54-19.

10. Jain MC, All burns with pregnancy, a review of 25 cases; Burns 1993, Apr 19(2): 166-70.

11. Akhtar MA et al: Burns in pregnancy: effect on maternal and fetal outcomes. Burns, 1995, 20(4): 551-5.

12. Pant R; Genital burns and vaginal delivery, Int J Gynecol Obstet: 1995, Jul 50(1): 61-3.

13. Wehn JC, A pregnancy complicated by mature abdominal burn scarring and its surgical solution, A case report.; J Burn Care rehab; 2004 Jul 59(1): 279-90.