International Journal of Clinical Obstetrics and Gynaecology

ISSN (P): 2522-6614
ISSN (E): 2522-6622

www.gynaecologyjournal.com
2019; 3(3): 33-35
Received: 21-03-2019
Accepted: 25-04-2019

Santanu Bar
RMO CUM Clinical Tutor, Dept. of Obstetrics and Gynecology, Burdwan Medical College, Purba Bardhaman, West Bengal, India

Dilip Kumar Biswas
Assistant Professor, Dept. of Obstetrics and Gynecology, Burdwan Medical College, Purba Bardhaman, West Bengal, India

Amitava Pal
Professor, Dept. of Obstetrics and Gynecology, Burdwan Medical College, Purba Bardhaman, West Bengal, India

Correspondence
Santanu Bar
RMO CUM Clinical Tutor, Dept. of Obstetrics and Gynecology, Burdwan Medical College, Purba Bardhaman, West Bengal, India

Evaluation of fetomaternal outcome in pregnancy with burn injury: A prospective observational study

Santanu Bar, Dilip Kumar Biswas and Amitava Pal

DOI: https://doi.org/10.33545/gynae.2019.v3.i3a.09

Abstract
Burn injury during pregnancy is a severe threat to health of the mother and fetus. The present study was designed to determine the demographic profile, nature of burn injury, gestational age and obstetric outcome in relation to total burn surface area of pregnant mothers admitted in a apex level teaching hospital with burn injury. A prospective observational study was conducted on 53 pregnant women with burn injury admitted in burn ward at Burdwan Medical college and hospital from January 2016 to December 2018. Most of the women (47%) were primigravida at third trimester below 25 years of age having less than 50% total burn surface area. When total burn surface area was more than 50%, maternal and fetal mortality was 100% but burns less than 30% of total burn surface area had no effect on maternal mortality with low impact on fetal mortality (18%).

Keywords: Pregnancy, burn injury, total burn surface area (TBSA), maternal mortality, fetal mortality

Introduction
Burn injury during pregnancy is a severe threat to health of the mother and fetus. In developing countries like India, burns in women of reproductive age group occur more frequently than similarly aged women residing in developed countries [1]. Fetal and maternal morbidity & mortality rates are proportional to the percentage of area of burnt and when the total burn surface area (TBSA) exceeds 50%, maternal and fetal risk increases significantly [2-4].
The present study was designed to determine the demographic profile, nature of burn, gestational age, total burn surface area (TBSA) and obstetric outcome with fetal and maternal mortality admitted in a apex level teaching hospital with burn injury.

Materials and Methods
A prospective observational study was conducted on 53 pregnant women with burn injury admitted in burn ward under the department of surgery at Burdwan Medical College and Hospital, Purba Bardhaman from January 2016 to December 2018. All pregnant mothers having burn injury were examined and followed up during hospital stay within the *reference period*. All pregnant women with burn injury were included in this study. The parameters included were age, gravida, parity, gestational age, nature of burn and pregnancy outcome. The percentage of body surface area of burn (TBSA) was estimated by the method of 'Rule of Nine'. Diagnosis of pregnancy was made by history, clinical examination, urine for hCG and abdominal ultrasound. Fetal outcome was determined in relation to gestational age and maternal TBSA involvement. The study was conducted after clearance from institutional ethics committee and all mothers were examined after obtaining informed consent. Statistical analysis was done by mean ±SD and percentage in Microsoft excel.

Results
The total number (n= 53) of burn patients admitted in the burn ward under the department of surgery of Burdwan Medical College and Hospital, Purba Bardhaman during 2016-2018 was included in this study. In present study, majority (84.9%) were less than 25 years (Table 1). Flame burns were most common mode followed by scald burns at home during cooking. In this study, 47.2% of pregnant mothers were primigravida, 35.8 % were 2nd gravid and rest of them had gravida more than two (Table 1). As far as the nature of the burns were concerned accidental burn was the most common (69.8%) than suicidal (26.4%) and homicidal burns (3.8%) (Table 1).

Majority of the cases (62.3%) were found in third trimester of pregnancy with mean (±SD) Gestational age was 27 (±10.50) weeks and 95% CI value was 24.057 to 29.943 (Table 1). Table-2 shows 45.3% and 41.5% of mothers sustained burn injury up to 30% of TBSA and 30 -50% of TBSA respectively. Pregnant mothers of 9.4% and 3.8% had burn injury extended of 51-75% TBSA and >75% TBSA respectively. The mean (± SD) TBSA was 38.321 (±16.01) % with 33.834 to 42.808 of 95% CI and one sample difference of mean T – test was 17.3800 with p value 0.0000 (2- tailed). Table 3 depicts that all mothers died when TBSA exceeds 50% on the contrary 12.5% mothers were died with the TBSA of 31-50%. All mothers were survived when TBSA less than 30%. Table 4 shows with 31-50% of TBSA maternal mortality were 0%, 25% and 14.3% in first, second and third trimester respectively. Pregnancy Outcome according to TBSA in each trimester was shown in table 5. In first trimester out of 11 cases 25% and 83.3% had sustained miscarriage with less than 30% and 30-50 % b TBSA respectively. In second trimester out of 9 cases 33.3% and 75% pregnancy did not continued with less than 30% and 30-50 % TBSA respectively. In third trimester out of 33 cases 13.3% and 85.7% pregnancy did not delivered life birth with less than 30% and 30-50 % TBSA respectively. No foetus survived if burn exceeded 50% TBSA in all three trimesters.

Table 1: Demographic profile of burnt mother

		No of burnt mothers	Percentage
Age	<25 yrs	45	84.9
	>25 yrs	8	15.1
Gravida	Primi gravida	25	47.2
	Second gravida	19	35.8
	Gravida>2	9	17
Nature of burn	Accidental burn	37	69.8
	Suicidal burn	14	26.4
	Homicidal burn	2	3.8
Gestational ages	Ist trimester	11	20.8
	2nd trimester	9	16.9
	Third trimester	33	62.3

Mean age ±SD = 22.0566 ±3.91 years, 95% CI (20.9608 to 23.1524)

Table 2: Distribution of TBSA in pregnant mothers

TBSA (%)	Total pregnant mothers(n=53)	Percentage (%)
<30	22	41.5
30-50	24	45.3
51-75	5	9.4
>75	2	3.8

Table 3: Death of pregnant mothers according to TBSA.

TBSA	No	%
<30	0	0
31-50	3	12.5
51-75	5	100
>75	2	100

Table 4: maternal mortality according to TBSA in each trimester

TBSA	1st trimester		2nd trimester		3rd trimester	
	number of cases	Death (%)	No of cases	Death (%)	No of cases	Death (%)
<30	4	0 (0%)	3	0 (0%)	15	0 (0%)
31-50	6	0 (0%)	4	1 (25%)	14	2(14.3%)
>50	1	1(100%)	2	2(100%)	4	4(100%)

Table 5: Fetal outcome according to TBSA in each trimester.

TBSA	1st trimester(n=11)		2nd trimester(n=9)		3rd trimester(n=33)	
	No of cases	Abortion	No of cases	Fetal death/still born	No of cases	Fetal death/still born
<30	4	1 (25%)	3	1 (33.3%)	15	2 (13.3%)
31-50	6	5 (83.3%)	4	3 (75%)	14	12 (85.7%)
51-75	1	1 (100%)	2	2 (100%)	4	4 (100%)

Discussion

Present study was conducted on 53 pregnant mothers with burn injury. Twenty one (39.6%) of mothers were in the age group of less then 20 years, 45.3% in the range 20 to 25 years and rest are more then 25 years. Rezavand N *et al*. [6]. Found that pregnant women with burn were in the age group of 17-37 years (mean, 23.5 ±4.78yrs). In our study the mean age was (22.0566 ±3.91) years with range of 17 to 36 years. Forty seven percent of burnt mothers were primi gravida and 35.8 % were 2nd gravid (Table 1). Accidental burns were most common (69.8%) than suicidal (26.4%) and homicidal (3.8%) burns (table 1). Rezavand N *et al* [6]. Found that 56.4% pregnant women had accidental burn injury and 43.6% had self- herm burn. Accidental burns was more common in both the studies. Similar findings were noted in some other studies [1, 4, 9]. Our study shows 43%, 41.5% and 9.4% of mothers sustained burn injury up to 30%, 30-50% and 51-75% of TBSA respectively. Only 3.8% had burn injury extended more than 75% of TBSA. Earlier study of Masoodi *et al*. [2] noted in their series that 40% and 43.67% of pregnant women sustained burn injury upto 30% and 30-50% of TBSA respectively, only 6.89% and 9.19% mothers suffered from 51-75% and more than 75% of TBSA respectively. Most of the burnt cases were found in third trimester of pregnancy (62.3%) in contrary to Masoodi *et al*. [2] who noted majority of the cases(37.9%) were in second trimester of pregnancy[6].Total burn surface area is only important factor for maternal mortality. All mothers with less than 30% of TBSA were survived and only 12.5% mothers died with 30-50% of TBSA group. No pregnant women survived when burn injury affected more than 50% of TBSA (Table 4). Ghaffar U B *et al* [7] also found similar result

regarding maternal mortality except only 50% of women with 25-50% of TBSA were survived due to small sample size in there study [5]. Masoodi *et al.* [2] showed that no mothers survived who had burn injury more than 50% of TBSA which corresponds with our findings.

Mabogunje OA [8] conclude that early obstetric intervention has been recommended in a pregnant woman with burns greater than 50% of TBSA in the second and third trimester to improve maternal prognosis. The present study and other two studies by Masoodi *et al.* [2] Ghaffar U B [7] showed no alteration of maternal prognosis irrespective of obstetric intervention when burn injury was greater than 50% of TBSA.

In this study fetal mortality was directly related to TBSA. Burns involving upto 30% of TBSA fetal loss were 25%, 33.3% and 13.3% in first trimester, second trimester and third trimester respectively. On the contrary fetal loss with 30-50% of TBSA in first trimester, second trimester and third trimester were 83.3%, 75% and 85.7% respectively. Masoodi, *et al.* [2] reported that overall fetal mortality was 2.8% with upto 30% of TBSA and 65.8% fetal mortality with 30-50% of TBSA which differs from our study due to late referral, delayed initiation of active obstetric management and inadequate NICU facilities. In the present study no foetus survived when TBSA was more than 50% irrespective of gestational age which corroborate with Masoodi, *et al.* [2]. On the contrary study by Rezavand N *et al.* [6]. and Still J M *et al.* [5] found that single fetus was survived when TBSA was more than 50%.

Masoodi, *et al.* [4] and El-Gallal AR *et al.* [9] concluded that termination of pregnancy should be done irrespective of gestational age with more than 50% of TBSA. In a more advanced state of pregnancy (second and third trimester) in women with more than 50% of TBSA, burns had an undiserable effect in unfavorable environment for both mother and fetus which needs termination of pregnancy for better mother and fetal outcome. Even if the fetus is not viable, termination would lessen the burden on the mother. Present study did not found any improved result irrespective of mode of termination even in term pregnancy. Our study confirms that burns involving less than 30% of TBSA and its continuation have no adverse effect on prognosis of mother. Every attempt should be made to prevent onset of labor for enhanced fetal maturity. Masoodi, *et al.* [4] concluded the same observation.

Conclusions

Majority of burns in pregnancy are accidental in nature and occurred in the age group below 25 years. Most of the burns women are primigravida at third trimester having less than 50% TBSA. When TBSA was more than 50%, maternal and fetal mortality is 100% but burns less than 30% of TBSA have no effect on maternal mortality with reduced fetal mortality (18%).

Large sample size, multicentric study, multidisciplinary team approach with better CCU/HDU facility along with continuous electronic fetal monitoring (EFM) and better NICU facility may improve maternal and fetal survival in extensive burn injury.

Funding: No funding sources

Conflict of interest: None declared.

Ethical approval: The study was approved by institutional Ethics committee.

References

1. Nilesh A Shah, Vilas J Patel, Chilvana K Patel, Anand K Patel, Hardik N Saha, Nirupama J saha. Epidemiological study of burn patients with pregnancy. Indian J Burn. 2006; 14:44-6.
2. Masoodi Z, Ahmad I, Khurram F, Haq A. Pregnancy in burns: Maternal and fetal outcome. Indian J of Burn 2012; 20:36-41.
3. James R, Md. Scott, Ronald S, Md. Gibbs, Beth Y., Md. Karlan, Arthur F., Md. Haney, David N. Danforth. A Danforth's Obstetrics &Gynecology. Edn 9, Lippincott Williams & Wilkins, Philadelphia, 2003, 170.
4. Agarwal P. Thermal injury in pregnancy: Predicting maternal and fetal outcome. Indian J Plast Surg. 2005; 38:95-9.
5. Still JM, Law EJ, Gooding J, Colón-Santini J, Chudgar B. Effect of burns on maternal and foetal outcome in pregnancy. Annals of Burns and Fire Disasters. 2004; 17:72-6.
6. Rezavand N, Seyedzadeh A, Soleymani A. Evaluation of maternal and foetal outcomes in pregnant women hospitalized in Kermansaha hospitals, Iran, owing to burn injury, 2003-2008. Annals of Burns and Fire Disasters 2012; 25:196-9.
7. Ghaffar UB, Akhter N, Faruqui TH, Rizvi SJ. Burns during pregnancy: A socio-cultural disease. J Indian Acad Forensic med. 2010; 32(1):31-33.
8. Mabogunje OA. Burn injuries during pregnancy: An African series. Journal of the National medical association. 1990; 82(9):641-644.
9. El-Gallal AR, Yousef SM. Burns in pregnancy: A ten-year review of admitted patients. Annals of Burns Fire Disasters. 2002; 15:3.