



Analysis of Maternal and Fetal Outcome in Burns During Pregnancy

KEYWORDS

DR. PRADEEP GOIL

SENIOR PROFESSOR DEPARTMENT OF PLASTIC AND RECONSTRUCTIVE SUREGRY SMS MEDICAL COLLEGE JAIPUR, RAJASTHAN

DR MANOHAR K. MALVIYA

SENIOR RESIDENT.DEPARTMENT OF PLASTIC AND RECONSTRUCTIVE SURGERY. SMS MEDICAL COLLEGE JAIPUR

DR. NIRMAL KUMAR GUPTA

SENIOR RESIDENT DEPARTMENT OF PLASTIC AND RECONSTRUCTIVE SUREGRY G 4/3 OLD TRANSIT HOSTEL, GANDHI NAGAR JAIPUR

DR ARTI GUPTA

SENIOR RESIDENT DEPARTMENT OF ANAETHESIA G 4/3 OLD TRANSIT HOSTEL, GANDHI NAGAR JAIPUR

Introduction

burns in pregnancy is common in India. Burns are a major, global public health problem, resulting in an estimated 195,000 deaths annually. The majority of burns occur in low-and middle-income countries, with almost half occurring in the World Health Organization (WHO) South-East Asia Region. Women in the WHO South-East Asia Region have the highest rate of burns and account for 27% of global burn deaths and nearly 70% of burn deaths in the region. [1] Burns during pregnancy presents special management problems during pregnancy due to highly susceptible status of both mother and fetus to external stressfull conditions. In this study, an attempt was made to determine the factors responsible for poor maternal and foetal outcome in order to plan interventions to lower the morbidity and mortality.

Materials and methods

This is a retrospective study including 42 patients admitted in the burn and plastic surgery unit in tertiary referral center.

The data was collected on the basis of age, percentage of burn over the body surface, gestational age, maternal and foetal outcome. The percentage of body surface area burn (TBSA) was estimated by the method of Rule of Nine.All patients received routine thermal injury care, including fluid resuscitation, wound care and nutritional support. State of foetus was recorded at admission and monitored clinically as well as with weekly USG. On the basis of analysis and observation, results were drawn and discussed.

Results

Total 42 patients age ranging from 19 years to 42years were assessed. The injuries were predominantly domestic fire. The percentage of TBSA varied from 15 % to 90% .3 cases were below 20%, 9 were between 21 to 40%, while 30 were above 40%. Gestational age at the time of injury varied from 4 weeks to 30 weeks with 12 cases in first trimester, 26 in second trimester and 4 patients in last trimester . 32 mothers died after sustaining severe burns and 28 foetal deaths (abortions and intrauterine deaths) occurred. Maternal mortality was highest in >40% group, while no maternal mortality was seen in 1-20% group. Fetal outcome was also poorest in >40% group and best in 1-20% group. Fetal mortality was highest in third trimester and lowest in 1st trimester.

Table 1: distribution of patients

	1 st trimester	2 nd trimester	3 rd trimester	total
1 to 20%	1	0	2	3
21 to 40%	4	5	0	9
>40%	7	21	2	30
total	12	26	4	42

Table 2: maternal mortality

	1 st trimester		2 nd trimester		3 rd trimester		total	
1 to 20%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
21 to 40%	2	50.00%	4	80.00%	0	0.00%	6	66.66%
>40%	5	71.42%	19	90.47%	2	100.00%	26	86.66%
total	7	58.33%	23	88.46%	2	50.00%	32	76.19%

Table 3: fetal mortality (abortion/ intrauterine death)

	1 st trimester	2 nd trimester	3 rd trimester	total
1 to 20%	0	0	1	33.33%
21 to 40%	2	2	0	44.44%
>40%	4	17	2	88.46%
total	6	19	3	66.66%

Discussion

fetal loss during the first trimester was 50%, in second trimester was 73.07%, and in third trimester 75%. This is less compared with the finding of V. Mago et al. [2] and Usama.B.Ghaffar[3] The study highlights that as far as pregnancy is concerned burns precipitate abortions and premature labour on a very significant scale. Effects on the foetus are deleterious and proceed to abortion. McCauley et al. [4] reported that a second and third trimester burns may be lethal to the foetus with maternal burns more than 50% total body surface area.

Our study showed that maternal and fetal mortality increased with burns >20% of Total Body Surface Area and was maximum with burns more than 40%. This is in accordance with the study of Usama.B.Ghaffar[3] Thus a positive relationship was found between the percentage of maternal body burn and risk of maternal and foetal death.

Burns cause many maternal physiological changes, and places additional stress on systems that are already highly modified. Pregnancy is associated with hyperdynamic cardiovascular state. After burns there is increased capillary permeability and third space loss leading to hypovolemia, which may in turn lead to hypotension if the patient is inadequately resuscitated. This may lead to placental insufficiency, fetal ischemia, hypoxia and acidosis, as the placenta is a less preferred site. All these events lead to premature labor. Thus aggressive fluid resuscitation, upright posture and oxygen supplementation should be provided to the mothers even in the absence of smoke inhalation.^[5,6]

An additional factor is invasive burn wound sepsis, which may result in premature labour and adverse vasoactive effects. Thermally injured tissue produces prostaglandins and increases the synthesis of free arachidonic acid. This increases uterine contractility thus initiating premature labour and abortion.^[7,8]

Conclusion

Although the relevant literature is limited, the incidence of burns in pregnancy does not appear to be low, especially in developing countries such as India where burns constitute a social disease. Maternal survival is less likely if the burn wound exceeds 40% total body surface area. Thermal injury does increase the risk of spontaneous abortion and intrauterine fetal demise. Best chance for foetal survival is to ensure maternal survival.

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