

EXPERIENCE OF DISASTER MANAGEMENT DURING FLOOD 2011

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ABSTRACT

Objective: To analyze different types of obstetrical and gynecological disaster problems during the devastating flood in South Pakistan in 2011.

Study Design: Descriptive study.

Place and Duration of Study: Field medical hospital set up by Pakistan Army Medical Corps with the help of Chinese government in Kaloi camp near Badin, Sindh from Sep to Nov 2011.

Material and Methods: All nine hundred and fifty-one patients reporting to gynecology outpatient were included in the study. Sample size was calculated with the help of WHO sample size calculator by convenience non-probability sampling technique. Pregnant patients who needed hospital admission were referred to nearest civil hospital and excluded from this study. Similarly patients who had medical problems along with pregnancy e.g. gastroenteritis, skin problems etc were also excluded. All other patients reporting to gynecology outpatient department of field medical hospital were included in this study. Detailed history, thorough physical examination, ultrasound evaluation and available relevant laboratory investigations were carried out in all cases. Treatment was thus advised accordingly on the basis of diagnosis. Data were recorded on a specially designed Performa and then entered in computer. Results were presented in tabular form in numbers and percentages with the help of SPSS version 10. Mean \pm SD was also calculated in cases of quantitative variables.

Results: In three months duration 951 patients were attended in the gynecology outpatient department. Out of them 782 (82.22%) patients were pregnant. One hundred and sixty nine (17.77%) patients had different gynecological problems. There were nine emergencies in this period. Four were in advanced labor so delivered in camp's laborroom. Three cases of incomplete miscarriage and two cases of missed miscarriage were also managed promptly.

Keywords: Disaster management, Field medical hospital, Flood, Obstetrics and gynecology.

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INTRODUCTION

A disaster is defined as a sudden, massive disproportion between hostile elements of any kind and the survival resources that are available to counterbalance these in the shortest period of time. Major disasters create major disturbances in any system¹. In Pakistan few studies have been done on disaster management in natural calamities e.g, earthquakes and floods. Human and material loss in such situations is enormous and can be reduced if adequate precautionary measures are in place beforehand². Advancement of science and technology e.g.computers and special weather forecasts for flood update are

very helpful for reducing the morbidity and mortality toll in such situations³. The rationale of this study was to identify the different types of obstetrical and gynaecological problems encountered in women coming to field medical hospital set up during flood 2011.

MATERIAL AND METHODS

This descriptive study was carried out at Army field hospital, Kaloi camp, district Badin in Sindh from 1st September to 30th November 2011. All nine hundred and fifty one obstetrical and gynecological patients who reported in gynecological outpatient department were included through non probability convenience sampling technique. Sample size was calculated with the help of WHO sample size calculator. The massive flood resulted in destruction of buildings and uprooting of a huge population of interior

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Sindh. Arrangements were accordingly made to cater for a large number of gynecological patients belonging to the flood affected areas. Gynaecology unit composed of two medium sized tents, one for out patients and the other to be used as labourroom. Another big tent was set up as an operation theater for use of all surgical specialties. Gynaecological team was led by a gynaecologist assisted by two general duty medical officers and two nursing assistants/ operating room assistants with duties round the clock. Available relevant basic investigations were also requested from the small field laboratory. All patients were counseled about their problem, its treatment and follow-up. The aim was to provide good antenatal and gynecological care to women folk of that troubled area. Ultrasound machine was of low resolution. Investigations available were: blood CP, group and Rh factor, urine RE, blood sugar, liver function tests, renal function tests and serum electrolytes.

Army field hospital was a small part of a huge camp comprising of separate male and female living areas in the form of tents. Basically this was a canvas hospital which was modified to accommodate different specialists. All the twelve to fifteen medium sized tents of the hospital were labeled to facilitate patients. Tents were labeled as, Administration office, Medical reception center, Medical OPD, Surgical OPD, Gynaecology OPD, Children OPD, Family OPD, Pharmacy, Laboratory, x-ray department etc. A huge banner labeled as "Army Field Hospital" marked the entry point of the hospital. The camp was surrounded by flood water on all four sides. Access to the hospital was only possible on boats. No other health facility was present in the surrounding nearby area. The nearest civil hospital was itself quite far and located at a distance of about fifty kilometers and had to be accessed on boats. After Chief of Army Staff's visit to this field hospital many media people also visited it to use this hospital as a model for the establishment of such other field hospitals whenever and wherever required. All instruments and equipment were available in

labor room and operation theatre for deliveries, caesarean sections and other small gynecological procedures but anesthesia service and blood were not available. In addition to this, optimum sterilization of instruments was not possible due to no availability of autoclave. Moreover the environment inside and outside the hospital was very dusty. Risks and hazards of performing deliveries and surgical procedures in this set-up were identified and conveyed to the concerned authorities for future improvement of facilities in such hospitals. Patients requiring referral were shifted on hospital's ambulance accompanied by a lady doctor. Despite major limitations gynecological and obstetrical services contribute up to their maximum potential. Emergency obstetrical care including careful safe delivery, prevention of postpartum hemorrhage and assessment plus care of new borns was provided to the four patients who delivered in the field hospital's laborroom. Contraception advice was also provided. Medicines were dispensed to patients both in the hospital as well as on mobile ambulances with on board general duty medical officers. These ambulances would go to peripheral areas daily serving stranded people. Feed-back of patients was regularly given to commanding officer of the hospital. Data analysis was done with the help of SPSS version 10. Data were summarized as total number of patients both obstetrical and gynaecological, age, parity, gestational age and diagnoses. Numbers, percentages and Mean \pm SD were used to describe the data.

RESULTS

Total number of patients who reported to gynaecological outpatient department of field hospital was 951. Out of them 782 (82.22%) patients were pregnant and 169 (17.77%) had gynaecological problems. Out of pregnant patients 732 (93.60%) patients had previous vaginal deliveries while 50 (6.39%) had one or more previous caesarean sections. Mean \pm SD for age of patients was 26.5 \pm 6.6. Table-I shows different demographic characteristics of patients whereas table-II and table-III show number and percentages of different obstetrical and gynaecological

cological problems encountered in field hospital during the period of study. There were nine emergencies during the three months tenure of this field hospital. Four patients were in labor, three (33.3%) were cases of incomplete miscarriage and two (22.2%) were of missed miscarriage. All were managed promptly. Laboring

tab Mefenamic acid (500 mg) 8 hourly –all for seven days. All were provided with follow-up proforma and advice to report again after a week.

DISCUSSION

The 2014 global climate risk index places Pakistan third among the countries most affected by extreme weather events in 2012 (Kreft and

Table-I: Demographic characteristics of the patients (n=951).

Demographic characteristics	Number of cases	Percentage (%)
AGE: Less than 20 years	51	5.36
21-35 years	826	86.85
36 years and above	74	7.78
PARITY Primigravida	128	13.45
Para 1-4	781	82.12
Para 5 and above	42	4.41
Gestational age: upto 28 Weeks	63	6.62
28-34 weeks	74	7.78
34-40 weeks	814	85.59

Table-II: Different obstetrical problems of the patients (n= 782).

Percentage	Number of patients	Percentage (%)
Anaemia	233	29.79
Oligohydramnios	128	16.36
Reduced fetal movements	93	11.89
Pregnancy induced hypertension	91	11.63
Missed miscarriage	52	6.64
Threatened miscarriage	43	5.49
Incomplete miscarriage	40	5.11

Table-III: Different gynaecological problems of the patients (n=169).

Gynaecological problems	Number of patients	Percentage (%)
Vaginal discharge	54	31.95
Subfertility	17	10.05
Pelvic inflammatory disease	12	7.10
Fibroids	11	6.50
Hydatidiform mole	5	2.95
Uterovaginal prolapse	12	7.10

patients were in advanced stage so they were delivered in the camp's labor room. Cases of miscarriage were bleeding heavily. Products of conception were removed with sponge-holding forceps followed by intravenous syntocinon and vaginal misoprostol after which bleeding settled. They were kept under observation for three to four hours after which they were discharged home with tablet Metronidazole (400mg) 12 hourly, cap Ciprofloxacin (500 mg) 8 hourly and

Eckstein, 2013). In terms of percentage of gross domestic product (GDP), Pakistan's losses from flooding in 2010 (5.8 percent of GDP for 2009/2010) were relatively greater than those of Japan in the 2011 tsunami (4.6 per cent of GDP (National Disaster Management Authority, 2013)). Starting from the 2010 floods, which affected 20 million people, Pakistan has encountered flooding every year⁴. In disaster situations demands always exceed the capacity of personnel

and available facilities. In such situations the emphasis of medical management shifts from individualized treatment to standardized therapy for disaster victims so as to provide maximum benefit to maximum number of patients. A successful medical response to civilian disasters, either natural or manmade, dictates formulation, dissemination and periodic assessment of a contingency plan to facilitate the treatment of victims². In developing countries pregnant women are at great risk during natural disasters e.g. floods³. Alongwith other problems there is increased risk of preterm deliveries and low birth weight babies during floods⁴. Complex humanitarian emergencies usually lack a mechanism to co-ordinate, communicate, assess and evaluate response and outcome for the major participants (Government agencies, United Nations, International committee of Red Cross, Non-governmental organisations and Military forces). Success in these emergencies depend upon the ability to accomplish agreed upon measures of effectiveness. Such measures have the potential to be a valuable, unifying disaster management tool⁵. Literature review does not reveal many studies on disaster management situations but whatever is available seems very valuable for planning of such future situations. One useful study in this regard is the report which represents birth data for the region of United States affected by Hurricane Katrina⁶. Although our study was of short duration but that was because of the fact that it was done during an emergency situation which was promptly responded to by concerned authorities. Majority were obstetrical patients. Most of the pregnant women were anaemic and under-nutritioned. Language barrier was overcome by the lead author's ability to partially understand and respond to the Sindhi language which most of the native women spoke. However quite a number of them understood and responded to Urdu language as well. Majority of these women had no medical checkup before. Detailed history was taken and thorough physical examination was performed in all patients. The emphasis was on optimum use of

clinical skills including bedside ultrasound for correct diagnoses and treatment keeping in mind that patients came from far-flung stranded areas and hence follow-up visits may not be possible/difficult. Moreover advanced laboratory tests and radiological help was naturally not available in that setting. Patient and her husband/attendant were fully explained the diagnoses and the treatment in addition to the recommended tentative time and mode of delivery in the civil hospital which was the nearest but still quite far away from the field hospital. Booking antenatal blood and urine tests were evaluated after getting them done on an urgent basis from the small field hospital laboratory keeping in mind the convenience of patients.

Another descriptive study on flood-affected pregnant women was carried out by Baloch *et al* for four months in 2011. This study was done in districts Jamshoro, Dadu and Hyderabad, Sind and it was found out that pregnant women were severely affected by flood having major impact on their health, life and their offspring⁷. In this study major group of patients was between 21 to 30 years of age. It was the same in our study. Similar was the case in Hamilton *et al* study as well⁵. The reason behind this seems to be the fact that at any given time this age group contains maximum pregnant women. In our study 826 (86.85%) were between 21-35 years of age. In the Baloch *et al* study 313 (54.81%) women were between 21-30 years of age. One hundred and twenty eight (13.45%) were primigravida in our study and 42 (4.41%) were grand multi-gravida (having 5 or >5 children). Remaining 781 (82.12%) were para¹⁻⁴. In the above-mentioned Baloch *et al* study commonest obstetrical problem was anaemia. This was the case in our study as well. The most probable causes of anaemia seemed to be nutritional deficiency and worm infestation. Second most common obstetrical problem i.e. oligohydramnios was most likely due to maternal nutritional deficiency and anaemia in addition to reduced fluid intake due to scarcity of clean drinking water. The

commonest gynaecological problem in our study i.e. vaginal discharge seems to be related to the unhygienic conditions prevalent there. In our study maximum patients were in the last trimester of pregnancy as was the case in study by Baloch *et al*⁷, Carbalb *et al*⁸. The explanation for this seems to be the fact that maximum number of women come to get medical care during last three months to get doctor's opinion about mode and timing of delivery for whom senior consultant gynaecologist was specially deputed to serve poor women of this remote area round the clock. Our study was done during a period of national calamity and hence was not an everyday happening. Facilities available outside such disaster situations were not available but still good results were obtained with the help of organised patient care made possible by the interest taken by commanding officer of hospital himself. However the period of study was only three months. Most of the problems encountered were logistic in nature. Non-availability of proper, clean labour room and operation theater. Experienced consultant gynaecologist was available 24/7. Dusty atmosphere and less-than-optimum sterilisation of instruments was a feature of this facility but considering the nature of disasters such compromise was to be expected.

CONCLUSION

Maximum patients in our study were pregnant, between 21-35 years of age and between 34-40 weeks of pregnancy. Anaemia was the commonest obstetrical problem followed by oligohydramnios. Commonest gynaecological problem was abnormal vaginal discharge. The field hospital contributed significantly during flood disaster. Obstetrical and gynaecological

patients treated were satisfied. This study has provided a database for such future studies in any disaster situation so that human and material resources can be utilized accordingly. More studies should be carried out on disaster management for improvement of medical services in such situations.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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