

Management Of A Mass Disaster: An Experience At Mayo Hospital, Lahore

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A brief account of the management of casualties of a mass disaster which resulted in a heavy loss of life and property is presented. It was one of the biggest disasters in Lahore involving 104 casualties managed by a single surgical unit of Mayo Hospital Lahore. Ten people (9.6%) died at the spot. Most of the injured were police men (63.5%) and party workers of a political party (26%). Seventy nine (76%) victims fell within 20 to 40 years of age. Thirty six (34.6%) underwent major surgical procedures. Eight (7.7%) had temporary disability while three (2.88%) became permanently disabled. In hospital mortality was 7 (6.7%). Septicaemia being the commonest cause of death i.e. 3 out of 7 (42.8%). Forty five minutes was the total time taken in triage and distribution of cases to different areas of management. The experience of the management of this mass disaster and the problems encountered during its execution are highlighted. The deficiencies and pitfalls in the management were noted and are now presented in the form of recommendations for further improvement in the major disaster plan.

Key Words: Mass disaster.

Disasters have now become an every day occurrence. Hardly a day passes without a news of a major disaster in some part of the world¹. A disaster may be a natural calamity or due to unnatural events like terrorist bombing, fire², chemical accident, radioactive material leakage and mass road traffic accidents³.

With increasing terrorist activities and easy access to weapons and explosives of mass destruction such incidents are now becoming more frequent. In the recent past major cities of Pakistan e.g. Karachi, Lahore, Rawalpindi and Peshawar have been target of such activities. Whenever such an incident takes place local police and the district management is the first to reach the site of incidence. It is usually with the arrival of casualties that the hospital authorities come to know about the occurrence of the disaster or some times the first information is received through a telephonic call.

The management of disaster requires comprehensive planning and laying down of procedures for those involved in the handling of a crisis. Improvement in the disaster management can be done through development of trauma care, education and research⁴. It is only by conducting regular drills that deficiencies in a disaster plan can be exposed and overcome. Thus ensuring easier and more effective management of the patients during a disaster⁵.

Management Procedure

We have a recent experience of managing the victims of bomb blast which took place at the session court in the peak hours of Saturday the 18th of January 97. Mayo Hospital Lahore being closest to the site of accident was called upon to manage this tragedy. North Surgical ward of Mayo Hospital was the unit on call on that day.

Ten minutes after the receipt of information the casualties started pouring into the A&E department of Mayo Hospital, Lahore. A total of 104 casualties were received which were then shifted to the triage area where a

team headed by one of the senior registrars categorised the patients according to the severity of the injuries. Table 1-3.

Table:1 Details of casualties

| | n= | %age |
|----------------------------|-----|------|
| Total injured | 104 | |
| Total Mortality | 19 | 18.2 |
| Received dead | 10 | 9.61 |
| Died during resuscitation | 02 | 1.9 |
| Died later in the hospital | 07 | 6.7 |

Table :2 Age distribution of victims

| Age of the victim | n= | %age |
|-------------------|----|-------|
| < 20 Years | 03 | 2.88 |
| 20 - 40 Years | 79 | 75.96 |
| 40 - 60 Years | 19 | 18.26 |
| >60 Years | 03 | 2.88 |

Table :3 Categorisation of injured

| Severity of injuries | n= | %age |
|----------------------|----|-------|
| Fatal | 12 | 11.53 |
| Urgent | 28 | 26.92 |
| Non urgent | 27 | 25.96 |
| Minor | 37 | 35.57 |

The patients were classified into fatal, potentially fatal, serious, urgent, non urgent and minor cases table 3. Dead bodies were sent to a separate area in the A&E till medicolegal procedure including identification was over. Potentially fatal and serious patients were shifted to resuscitation room while those needing intensive care were admitted in the ICU. Two of the seriously injured patients died during resuscitation. The general surgical team was helped by certain other specialities in the management of this crisis Table 4.

Two patients with chest injuries were referred to the thoracic surgery unit where they underwent thoracotomy. Fracture management of 12 patients was done by orthopaedic team. Eight out of them were managed by external fixators and above knee amputation was done in two. The general surgical unit was responsible for overall organization of the management plan. Abdominal, vascular and soft tissue injuries were also managed by the general surgical team. Table 5

Table 4: Patients managed by various specialities n=92

| Speciality | n= | %age |
|-----------------|----|-------|
| General Surgery | 78 | 84.79 |
| Orthopaedics | 12 | 13.04 |
| Chest Surgery | 02 | 02.17 |

Table 5: Primary operative procedures performed

| Procedure | n= |
|------------------------------|----|
| Laparotomy | 03 |
| Jejunal repair | 02 |
| Bladder repair | 01 |
| Vascular repair | 02 |
| Femoral vein | 01 |
| Brachial artery | 01 |
| Wound debridement | 20 |
| External fixator application | 08 |
| Thoracotomy | 01 |
| Amputations | 02 |

Table 6: Outcome of the victims

| Outcome | n= | %age |
|----------------------------|----|-------|
| Discharged after first aid | 37 | 35.57 |
| Complete recovery | | |
| with early discharge | 27 | 25.96 |
| with late discharge | 10 | 09.61 |
| Temporary disability | 08 | 07.69 |
| Permanent disability | 03 | 02.88 |
| In Hospital Mortality | 07 | 06.73 |

Table 7: Cause of death n=9

| Cause | n= | %age |
|--------------------|----|-------|
| Irreversible shock | 02 | 22.22 |
| Septicaemia | 03 | 33.33 |
| ARDS | 02 | 22.22 |
| Major burns | 02 | 22.22 |

Non urgent cases which were twenty-seven in number were shifted to the operating room for wound management and continuous monitoring. Regular reassessment of these cases helped us to identify two patients who initially did not show any signs suggesting serious injury. One of them had to undergo laparotomy resulting in repair of small gut perforation. The other patient was discovered to have vascular injury. Thirty-seven patients with minor injuries were treated in the dressing room and later discharged on the same day. Among those admitted in the hospital seven died during

the course of their treatment. Septicaemia being the commonest cause of mortality Table 6-7.

Discussion

This bomb blast was extremely tragic in the sense that 76% of the victim were young and mainly the servicemen. Mortality at the site or during transportation could be reduced if a mobile medical team and ambulance service was available which could reduce transport time to the hospital. General surgeons took the lead in the management of the casualties. Seventy eight (84.79%) patients were admitted in the surgical unit. Continuous monitoring and close observation further helped to reduce the mortality by identifying the patients in whom signs suggesting the serious injuries appeared late. While designing a major disaster plan a health facility needs to define the disasters in view of its resources, capability, and extent of the incident⁶. Pre-disaster planning involves developing disaster plans, performing regular disaster drills and the education of public⁷. Anticipation of natural disaster and formulating a strategy for their prevention is one of the most important part of disaster planning. Natural disasters are usually preceded by a pre-impact phase which is the time for alarm and warning⁸. For this electronic media services can be used to inform the community about the forthcoming disaster⁹. When the disaster is declared impact phase starts and so is the actual management⁷, which begins with the pre-hospital management at the site of the incident. Every major hospital of the city should have a well equipped ambulance service to evacuate the injured. Due to the lack of hospital ambulance service the casualties were brought to the Mayo Hospital on private vehicles and police pickups. A few ambulances of a charitable foundation were also used for this purpose. This caused improper first aid management of the patients with resultant delay and mishandling of the patients during transportation.

Proper management of patients in a disaster involves sending of the information of the incident to the concerned persons with a ready access of the patient to the health care system.¹⁰ Provision of basic life support measures, triage at site and the transportation of the patients are essential components of the pre-hospital management which unfortunately is non existent in our setting.¹¹

A mobile medical team may be summoned if there are large number of serious casualties. Some may need resuscitation at site with subsequent referral to the concerned hospital. Remaining patients will be referred in order of priority decided on triage conducted at site.

The patients on reaching the hospital are directed to the reception area having an ample space for accommodating the patients. If the number of patients suddenly overwhelm the capacity of the reception area, alternative arrangements should have been made before hand to prevent the chaos usually associated with disasters¹³.

With increasing number of patients beyond the capacity of the hospital, less serious patients already

admitted in the hospital can be discharged and sent home with an advice to come later when the hospital returns to normalcy¹⁴. Whenever massive number of casualties arrive at an overloaded facility, triage is considered as most critical factor in determining the survival of the patients¹⁵. Triage of the casualties is a dynamic processes conducted at various stages of patient management with the purpose to identify casualties requiring immediate care¹⁶. A rapid and sensitive decoding of vital signs by an experienced person is of great value¹⁵. The triage is followed by operative and postoperative phases in management of seriously ill patients. Adequate hospital supplies including drugs, resuscitative fluids and oxygen etc. should be in reserve for any major incident. These supplies should continuously be checked and replenished¹⁷.

All the injuries and the management undertaken should be properly documented and stored. This helps in research, medical audit and can also be used for assessing the quality of the patient care provided. All subsequent medicolegal activity is based on medical records¹⁸. Communication between the hospital and the site of the accident is very important for better management of disaster¹². Lack of communication adds to confusion, anxiety, and panic already rife in such situations¹⁹. Radiopaging system or cellular phones can be used for this purpose. Information to the press and the electronic media regarding number of casualties and severity of situation is to be passed on at regular intervals. This helps to decrease anxiety of the public²⁰.

Surveys conducted in the different parts of the world highlighted the inadequacy of the current disaster management plans specially in the training and education of the staff¹¹. The regular disaster drills are surest way of assessment of the level of preparedness to manage a disaster²⁰. The aim of disaster drill is to provide to the staff a realistic and practical session and acquaint them with their role in identifying potential problems in the management plan⁵. Specific protocol and additional knowledge is needed for the prevention of contamination of the hospital personnel and management of the patient with chemical weapons or hazardous material exposure²¹. Rehabilitation of the casualties after the incident is a neglected aspect of the disaster planning²². Disasters affect mostly the vulnerable sections of the society including mostly the women, elderly, children, disabled and the poor²³. These patients require long term followup at a well developed rehabilitation centre. Eleven of our patients had some disability as a result of the injuries suffered in this bomb blast. Three patients out of them became permanently handicapped. Our health system lacks rehabilitation services which are readily available in most of the advanced countries.

We recommend that for proper execution of disaster plan a fully equipped ambulance service should be available round the clock in all the major hospitals of the city. A properly trained mobile medical team must rush to the site of accident and conduct triage at site. All the big

hospitals should have major incident procedure designed according to their resources. The victims of a disaster should only be referred to the designated hospital. Radio paging system for better communication is a necessity for proper management in such situations. A dry run (disaster drill) should be conducted twice a year on a regular basis.

It is not only the hospital authority that bears the overall responsibility in the management of disaster. Police, district management and other agencies also play an equally important role. Proper co-ordination and liaison between all these agencies is pivotal for smooth handling of such disasters. In this regard regular meetings of the concerned staff and holding of seminars for public awareness are crucial. A directory of all those directly or indirectly involved in disaster management with their contact numbers should be formulated and regularly updated.

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