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Review Article

Surgical emergency of non-traumatic nature needs attention

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ABSTRACT

The aim of managing surgical emergency includes evacuation of the patient to appropriate hospital to save his life. Patient's condition requires prompt assessment, simultaneous resuscitation followed by early, urgent or immediate surgery timed for best outcome. The aim is not only to overcome surgical emergency and restore the patient back to his normal anatomical and physiological status but is also to reassure his friends and relations and clear their anxiety or apprehension. Patient requires attention, sympathy, and highly devoted care. Gravely ill patients requiring surgical emergency care should be managed in an exclusively designated and highly specialized dedicated unit in a hospital where they can receive focused uninterrupted attention by highly trained, skilled, energetic, efficient and knowledgeable staff which includes a team of doctors, nurses, technicians, paramedics headed by a Chief Intensivist. The unit should be self contained with medicines and state of the art equipment necessary for revival of the patient. The Surgical Intensive Care Unit (SICU) should be co-located with departments like OT, Emergency Department and Radiology Department which support the emergency care. Objectives also include extending the availability of emergency services complete with logistic support and expertise to meet the challenge of life threatening conditions even in remote mountains and localities with difficult terrain. There should be provision of evacuation of the patients to hospitals which have facilities for advanced investigations and for specific definitive procedures. Therefore it should be possible to evacuate any emergency patient to nearest higher center by air ambulance, surface transport or even by sea depending upon the terrain.

Key words: - Surgical intensive care, Critical care in surgery, Non traumatic surgical emergency care.

INTRODUCTION

Patients with surgical emergency must be evacuated to acute care hospitals for urgent resuscitation and operative intervention if indicated. These patients need management in peaceful environment of intensive care units to alleviate pain, distress, discomfort and anxiety. Patients anywhere and in any region should have access to systematic and efficient surgical care. High risk patients in extremes of age are generally totally dependent upon others in intensive care units. The aim is to correct sudden onset of acute pathological process and restore the patient to normal health, reduce complications arising out of stay in intensive care unit and avoid morbidity and mortality. Hospitalization in acute care hospitals and intensive care units are associated with increased rates of death. In the UK, 27% of all patients admitted to intensive care unit (ICU) display the clinical manifestations of severe sepsis within the first 24 h of their ICU admission; these patients have a subsequent 47% hospital mortality. [1] The metabolic response to injury or sepsis may evoke exaggerated systemic inflammatory response syndrome (SIRS) which if not managed timely may result in multiple organ dysfunction and death. The pathological events result in tissue hypoxia, cellular death and metabolic acidosis. Hospitalization in intensive care units is labor, resource and cost intensive and not without hospital care associated infections. Therefore, prolonged stay in intensive care unit should be optimized to avoid these infections and also to accommodate new patients who too need beds for intensive care. Therefore hospitalization in ICU should not be prolonged without reason. Surgical intensive care requires multidisciplinary coordination and efforts to save the life.

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DISCUSSION

Emergency care: Surgical emergency is an unpleasant and painful episode which may affect any age group and requires urgent intervention to correct life threatening disease. Non traumatic surgical emergency may develop suddenly due to acute pathological event or may occur unexpectedly over a chronic disease process necessitating hospitalization. Ideally all hospitals should be managing common surgical emergencies which must have trained staff and well equipped intensive care units and emergency departments. In 1859, Florence Nightingale mentioned the concept of a space within the hospital dedicated to caring for post-operative patients.[2] Surgical intensive care demands immediate availability of necessary expertise for desired resuscitation and surgery. Critically ill patients are common in emergency medicine and require early and aggressive care to optimize outcomes. [3]

Approach and accessibility for acute care differs due to terrain, climate, rural or urban setting and also varies in town and mega cities and from country to country. Emergency care may not be available in remote inaccessible regions and therefore a mechanism should be in existence for quick evacuation of the patient to designated hospital by surface or air transport staffed and equipped for on board life support. Even in megacities desired and expected emergency care may not be available because of overcrowding in hospitals. In many cities, hospitals may become unapproachable due to roads being blocked due to conflicts, heavy traffic and unending processions delaying care to patient. Hospital should be informed about expected time of arrival of the patient in emergency department. The reception team should carry the patient from ambulance to Emergency Department for primary survey and evaluation which includes brief history and clinical examination. Investigations and resuscitation should proceed simultaneously within judicious time frame and time consuming investigations be better avoided in favor of need for immediate surgery. Management of acute trauma care should be segregated from care for non-traumatic surgical emergency as both categories of patients require focused attention which differs in logistic support and specialized procedures. Problems can arise when the hospital receives mass casualties following disasters which can result in diversion of material and human resources at the cost of hospitalized emergency cases. Surgical emergency patient might have multiple organ involvement and therefore priority must be given to organ most likely endangering life and therefore should be tackled first.

Hospital should be organized to receive emergency cases at any hour of day and night. Time interval between arrival of the patient and surgery should be optimized for best positive outcome and should not extend beyond two hours. However some emergencies may need immediate intervention and therefore lifesaving resuscitation might have to be carried out in OT with simultaneous surgery in cases such as sudden intraperitoneal bleed. Emergency cases admitted during working hours are best managed during working hours itself when hospital is fully functional and maximum support of technical and investigative resources are available to them in contrast to midnight hours when man power, emergency services and supportive departments have to be alerted, activated and coordinated which may result in delay in operative intervention. Therefore the management of emergency should not be delayed and the concerned staff must be available within minutes.

Every patient with serious emergency must be promptly resuscitated and offered lifesaving surgery if needed. No patient should be left to die without necessary surgery which can avoid or delay the mortality. Possibility of certain fatal outcome should not restrain a surgeon from operating and retrieving the patient even at the cost of his personal prestige and honor. Bold initiative and all out attempts to save a precious life speaks of ultimate devotion to principles of emergency surgical management and should be above all considerations. A number of scoring systems have been devised to assess the patient's chances of survival after surgery. The most commonly used is the American Society of Anesthesiologists (ASA) score which includes a category, ASA V, for patients who are not expected to survive whether or not surgery is performed.[4] The Acute Physiology and Chronic Health Evaluation (APACHE) score or the later version APACHE II, is commonly used to assess surgical patients in the Intensive Care Unit (ICU) where it was designed to predict outcome, but it has seldom been used in the pre-operative assessment.[5]

Level of care: Emergency care services are not available uniformly and easily in many parts of the world particularly in remote regions of underdeveloped and large countries because of numerous factors. Availability of surgical emergency services with its urban orientation contrasts markedly from non-existence of such services altogether in rural areas including difficult terrains like deserts and high altitude regions with extreme cold climate. Therefore high priority should be given to create hospitals at various levels so that emergency surgical services are made

available to all at need within a reasonable period of time and approachable distance. Following levels of hospitals be created to provide emergency care with chain of evacuation from remote regions to accessible locations like towns and cities.

Level IV hospitals should be able to undertake resuscitation and basic lifesaving procedures in remotest regions and be designated as Peripheral Hospitals.

Level III hospitals should be able to manage major and common life threatening emergency which includes resuscitation and surgery like laparotomy and thoracotomy and these hospitals be designated as Mid Zonal Hospitals.

Level II hospitals should have on its strength all major specialists with facilities for major investigations like Computed Tomography, MRI and Doppler Studies. These hospitals should be designated as Zonal Hospitals.

Level I hospitals are located in Metro or large cities which are ultimate destinations for any type of advanced care for any type of emergency with super specialists on its panel. These hospitals should have all types of investigations needed for any type of emergency. These hospitals are designated as Tertiary Care Hospitals.

In remote regions, peripheral hospitals can be erected on semi permanent basis by prefabricated material which can be transported by surface or air depending upon the topography of the terrain. These hospitals must have components for reception, resuscitation, treatment and hospitalization. Without these hospitals patients in remote locations with life threatening emergency have no chances of survival. Arrangements must exist for surface and air evacuation of selective patients from remote regions to suitable hospitals. In event of patients being unfit to travel to a higher centre, surgical team should be dispatched to peripheral hospital by earliest available transportation.

Role of senior consultants in surgical emergency: The knowledge, experience, expertise and guidance of senior consultants should be available to juniors during emergency even during odd hours. Age should neither exhaust the zeal for active participation in emergency nor should one get saturated with satisfaction of having achieved and done enough in life. No surgical emergency be denied the benefit of experience and guidance of seniors on daily basis till finality is achieved. Management of life threatening emergency must not be left solely in the hands of inexperienced juniors. Under no circumstances the senior should absent himself from visiting the patients on any day.

The quality, competence and effectiveness of emergency care depends upon continuous up gradation of knowledge, skills and technology. Junior surgeons must be assisted across the table during surgery by seniors to avoid technical mistakes due to inexperience which may cost the patient increased morbidity and mortality. For example following gut surgery the rate of intra peritoneal sepsis and development of faecal fistula is higher in the hands of inexperienced surgeons as compared to experienced senior surgeons. Senior surgeons particularly the Head of Surgery must visit surgical intensive care unit and acute surgical wards twice a day as an example to juniors and also for the sake of better patient outcome. Juniors cannot be left to deal with grave surgical emergency which may cost the patient his life. A case as an example occurred in a tertiary care hospital where junior consultants and a senior resident ventured to attempt repeated endoscopic stenting in a patient with gall stone pancreatitis resulting in on table haemorrhage and subsequent death. The senior consultant was not available and the whole procedure was conducted in his absence during night. Such misguided attempts may cost precious lives which remain unaccounted and encourage further misadventures. A culture of activism and participation by seniors would tremendously improve surgical emergency care. Seniors must guide juniors in allotting priority and stress the need for urgency in managing these cases. They have a special role to play in functioning of Emergency Department for its quick and efficient turn over and keep it geared up to receive emergency cases and constantly supervise staff for its readiness to manage fresh cases. Seniors performing major and minor procedures regularly would help them being in touch with their skills and would also save them from embarrassment on exceptional occasions when circumstances demand their involvement in a particular case and personality. Seniors must continue to engage themselves relentlessly in their supervision of dealing with emergency care but without irritating interference.

Senior consultants too must share the emergency work load with their colleagues and juniors voluntarily as a matter of responsibility and as often as possible depending upon the severity of emergency. They should also be easily accessible and available on call as and when required even during odd hours for high risk and complicated surgery. Besides earning respect such humane attitudes would certainly be exemplary and

justified. Seniors presenting themselves for supervising resuscitation and conducting emergency operations will give a sympathetic message to relatives and friends of patients besides improving the outcome and preventing deaths.

Academic activities and training of staff: Department of surgery and supportive departments must undertake the responsibility for organizing academic activities like seminars, symposia, lectures, emergency clinics, journal clubs, video presentations and workshops on regular basis for up grading knowledge and promoting professional excellence. Undertaking emergency care responsibilities without upgrading knowledge can result in mistakes and may also limit the scope for further improvement. Personnel engaged in emergency care must be selected on the basis of their capabilities and educational back ground who possess the qualities of enduring long working hours, are punctual, hardworking, sincere, efficient, disciplined, helpful, sympathetic, compassionate and dependable. The training for emergency surgical care should be expanded and extended to more and more personnel. In times of need and grave emergency they should be able to perform multiple tasks including capability to intubate the patient, establish life lines, handle and operate ventilators, monitor vital parameters and perform cardio-pulmonary resuscitation. Old seasoned hands and minds have responsibility to educate the budding intensivists and surgeons.

Acute care hospitals: Patients presenting with surgical emergency are likely to stay in hospitals for a long time. Patients in surgical intensive care units are admitted generally following severe trauma, shock, major surgery and life threatening disorders.[6] The hospitals should be adequately staffed, well equipped and adequately stocked with logistics and non-expendable items and drugs. The hospital should have the facilities for investigation like blood gas analysis, CT, MRI and other investigations. Availability of investigations like blood gas analysis is of paramount importance for any hospital. Lactic acidosis signifies a critical illness of recent onset with shock. Careful history taking particularly pertaining to ingestion of drugs is necessary to exclude these as cause of acidosis. Patients with high arterial lactate levels of more than 5 mmol/L and a pH of less than 7.35 have a poor prognosis with mortality rate of 75%. The patients with metabolic acidosis have double the chances of death than those without metabolic acidosis. The mortality rate of patients with a serum lactate level greater than 2 mmol/L persistently after 24 hours with an associated acidemia approximates 70%.[7]

Work ethics and standard operating procedures must be well rehearsed. Staff should be skilled, well trained, efficient and sympathetic. For example, Pronovost and colleagues showed the importance of ICU characteristics (i.e., staffing levels of physicians and nurses) on post operative outcome. They found that a system of daily rounds with a certified intensivist was associated with a reduction in in-hospital mortality by a factor of three and that an increased nurse to patient ratio was associated with halving of in hospital mortality.[8] Supportive departments should be sited close to each other. Patients admitted to intensive care units are more prone to complications related to high risk factors, prolonged immobility, cardio-respiratory problems, airway and breathing difficulties, CNS disorders, sepsis, gastrointestinal complications, renal failure, anaemia, nutritional deficiency, pressure sores and deep vein thrombosis. Important factors can be grouped into one of a number of main categories: first, those that are present prior to surgery that include the co-morbid status and age of the patient and the type and urgency of the surgery performed and, second, the physiological derangement of the patient at the end of the surgical procedures.[9] Therefore these hospitals should be able to respond to these challenges.

Role of non-state and private hospitals: Private hospitals and nursing homes can play and do play a major role in meeting the challenge of surgical emergency when the state run health care services are over burdened with tremendous volume of work load. Large numbers of patients with surgical disorders have to wait for surgery from months to years in state run hospitals due to long waiting period. A few of them do develop life threatening emergency due to sudden onset of complications. A classical example is a patient with inguinal hernia who is awaiting surgery lands up suddenly with obstructed inguinal hernia. Such an emergency can be avoided provided an early operation is conducted which may not be possible always because of restricted capabilities of the busy state hospital and also due to long waiting list. In order to reduce surgical emergency, morbidity and possible mortality and to decongest the work load on state run hospitals, services of empanelled private hospitals and nursing homes can be availed. These private commercial hospitals can be outsourced to take up partial work load of state run hospitals without compromising on quality and cost. These out sourced empanelled hospitals must conform to high standards of expertise and positive results.

CONCLUSION

Emergency surgical services have seen a ground breaking improvement in last few decades in reducing morbidity and mortality among patients despite increase in number of invasive procedures and surgery being conducted on daily basis. This achievement has been possible due to safer anaesthesia, newer antibiotics, asepsis, development of state of the art investigations, construction of modern hospitals and professional competence. The aim of managing surgical emergency is to transport the patient to appropriate hospital at the earliest for resuscitation and surgery if required. The personnel and hospital must be fully geared up to treat surgical emergency and should be well equipped and manned by dedicated and skilled professionals. Mechanism should be evolved to enable patients in remote regions to receive lifesaving attention. Constant training and up gradation of knowledge and skills under the guidance of intensivists and surgeons would improve the outcome. Seniors should play an active role in managing life threatening emergency and must guide and help their juniors with their experience and wisdom. All personnel dedicated for such lifesaving responsibilities must be kind and sympathetic to patients and relatives by virtue of inherent nature, tolerance, compassionate words and cultivated conduct.

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