

Nurse Lecture MIEM

EMERGENCY ADMISSION IN THE MARYLAND INSTITUTE FOR EMERGENCY MEDICINE

I intend briefly to describe the Maryland Institute for Emergency Medicine and how it functions to provide background information for our concepts of emergency medical care. I hope a description of our facility and our results will persuade you that many traditional teachings and orthodox approaches in medicine are no longer applicable to the critically ill multiple trauma patient and call for a radical re-orientation in our thinking. This is perhaps a plea to the medical world to look objectively at the problem of multiple trauma and critical care medicine and accept the need for new innovative teaching, a new breed of doctors and nurses, and an aggressive pre-planned systems approach to the complex medical patient involved.

To achieve this crosses many sacred barriers with one's medical colleagues especially when they themselves are not involved in this area of medicine and are consequently unfamiliar with the enormous problems involved. To allow the smooth promotion of experienced clinician training will require the acceptance of traumatology and critical care medicine as specialties in their own rights by the American College of Surgeons and the AMA.

The Maryland Institute for Emergency Medicine was created by an Executive Order from Governor Mandel on February 26th of this year. The new State Institute provides a state service to all the physicians in Maryland and is an independent area outwith the medical school but still part of the University of Maryland.

The first intimation that we are to receive an emergency admission usually comes over our special "hot line" from the State Police Aviation Center who inform us that a helicopter is on its way to the Institute with one or more accident victims and an appraisal of the severity of their condition. An estimated time of arrival is provided which may vary from four minutes to one hour. A team of doctors and nurses are dispatched to the heliport to meet the patient and perform immediate resuscitatory measures if necessary. An ambulance also awaits the helicopters arrival having been forewarned on the communication network.

A second team of three physicians and an anesthesiologist and nurse are ready gowned and gloved in the Institute's own admitting areas to await the arrival of the patient from the heliport. All facilities are pre-prepared and urgency is instilled into the system. Bottles of plasma are ready hung and prepacked sterile trays of instruments for cut down, subclavian catheterization, Foley catheterization and even an emergency thoraco-abdominal procedure are layed out in a state of readiness. The key word is aggression and fast moving stream-lined purposeful action. We are strong protagonists of colloid infusions for the vast majority of shocked patients and rarely use ringer lactate during the emergency admission and stabilization of the patient. Emphasis throughout resuscitation is still centered on the ventilation - infusion - perfusion regime and immediate endotracheal intubation and positive and expiratory pressure

ventilation are mandatory in all severely shocked patients. The majority of multiple trauma emergencies are in a state of hemorrhagic shock whether from blood loss at the site of the fractures or from frank external or internal bleeding and a strict policy for colloid and blood infusion has been established. This consists of commencing infusion with a plasma protein with the strict proviso that this must not exceed 1250 cc before blood is introduced into the protocol. A stock of uncrossed matched 0- and 0+ blood is maintained by the blood bank in our admitting area and we do not hesitate to use this in critical cases despite the theoretical risks because the alternative is a dead patient.

Our weekly consumption of blood is around 200 units which will give you some idea of the numbers and types of patients we are dealing with.

A number of factors are usually omitted in error from an emergency admitting area where massive transfusions are in use - and this is simply because many of the lessons we have learned in the open heart procedures or with massive blood transfusions in a different setting -- are forgotten in the heat of the emergency or because they have not previously been applied in this context.

I am talking about such measures as warming the blood before infusion, the automatic introduction of various active blood components into the routine especially fresh frozen plasma and blood platelets. The important point is that the doctors should not have to think about these extra measures but they should be part of a pre-existing automatic plan - thus after a certain number of units of blood one should automatically be

handed a unit of fresh frozen plasma or units of platelets. One further sophistication is the use of packed red blood cells rather than whole blood and the re-establishment of circulating volume by equating a 250 cc unit of plasma protein with each unit of packed cells. Such an approach offers many advantages, reducing various immunological risks and reactions while allowing blood components to be extracted by the blood bank for other use.

Within seconds of the patient's arrival, he will have received intravenous lines into his upper extremities and lower extremities, a right atrial catheter and frequently a pulmonary artery catheter, an intra-arterial line via a percutaneous femoral stab and a number of other monitoring devices such as EKG. Within minutes the first readings will appear by teleprinter from the Institute's own clinical laboratory providing us with blood gases and other biochemical and hemotological data.

A number of essential x-rays will be rapidly performed such as a skull and cervical spine and whenever circumstances permit and the patient is sufficiently stable, total body x-rays will be taken.

TREATMENT ALWAYS BEGINS BEFORE DIAGNOSIS in these complex shocked patients and as control is gained over the patient's general state on-going evaluation commences. We have refined our diagnostic approach to essentials and on the experience which we have gained in managing approximately 2,000 multiple trauma patients over the last three years we are convinced of the efficacy of certain diagnostic measures and the

lack of value of many of the procedures described in the textbooks. In essence the most important diagnostic procedure to decide whether urgent surgical intervention is required in a

head injury - is a carotid angiogram which can be carried out without special equipment using only a portable x-ray machine if more sophisticated apparatus is not immediately available.

abdominal injury - is a meticulously carried out abdominal lavage and this should not be confused with a single needle tap or even a four quadrant tap which are much less reliable.

chest injury - unless obvious clinical signs are present demanding immediate tube thoracostomies a chest x-ray is the main provider of information.

As a result of attention to detail such as the insertion of a purse string suture in to the peritoneum before the abdominal lavage catheter is inserted and the correct identification of peritoneum picking it up with Kelly forceps before insertion we have not missed a single abdominal injury in the last thousand admissions.

Urgent definitive surgery is an essential part of successful management and on occasion the critical multiple trauma patient is admitted directly into the operating room where immediate abdominal or thoracic exploration is carried out. The immediate availability of

operating rooms and operating room staff is vital and no longer in this day and age is it acceptable to have to request an O.R. in a different area of the building or to call in an extra scrub nurse or technician during which period the patient is rapidly exsanguinating.

These are but a few of the innovative approaches which we are using successfully to dramatically reduce the mortality rate of these serious accident victims.

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