RECENT TRENDS IN DIAGNOSIS AND MANAGEMENT OF BLUNT OBDOMINAL TRAUMA.

Essay for partial fulfilment of
M.CH. degree in General Surgery.

Recent trends in diagnosis & management of blunt abdominal trauma.

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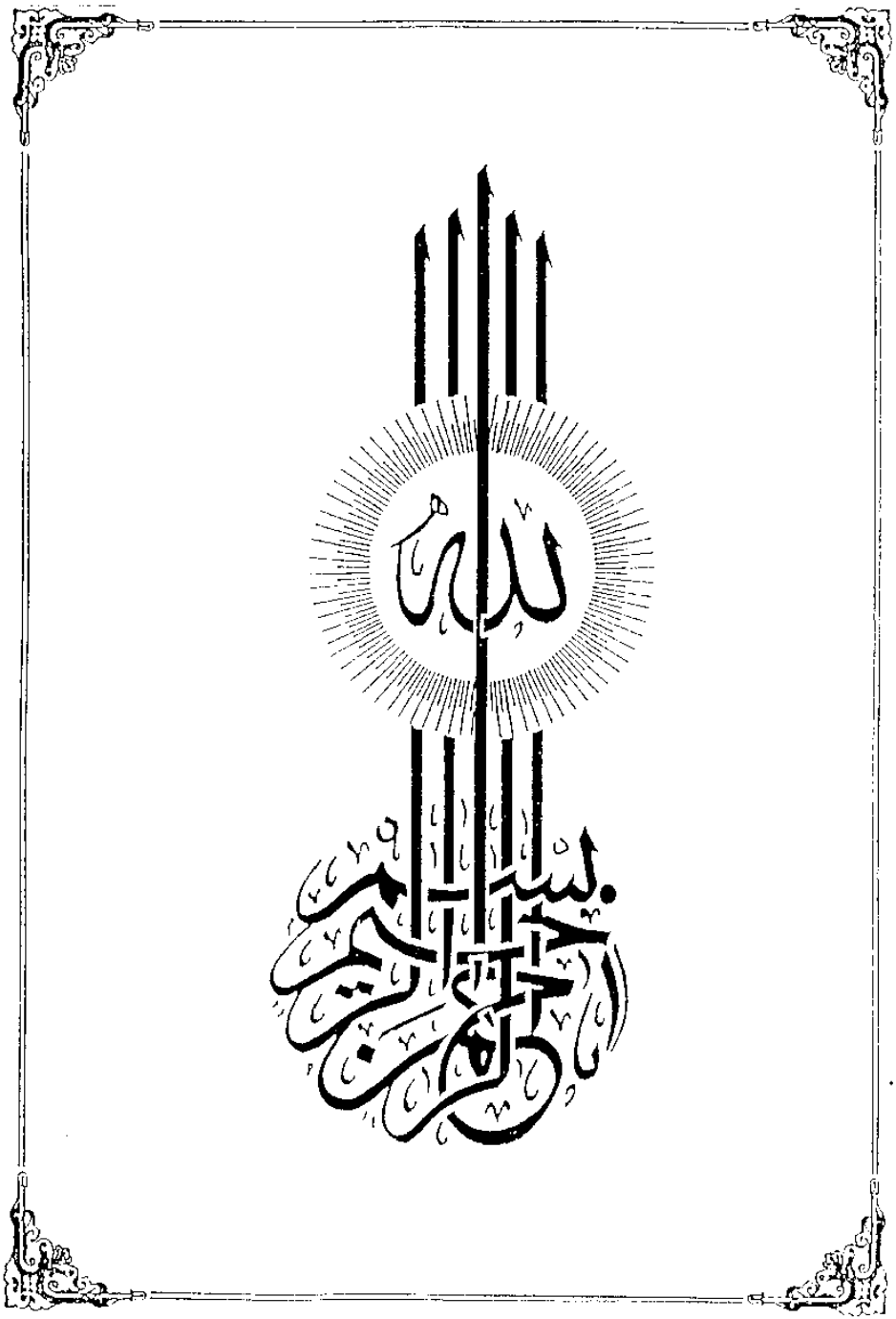

I would to express my sincere gratitude to PROF. DR. MOHAMMAD SAKLH ZAKI, PROF. of General Surgery, Faculty of Medicine, Ain Shams University; for his continuous help and interest through this work .

I also express my sincere appreciation to PROF. DR. RADY SAAD, PROF. of General Surgery, Faculty of medicine, Cairo University; for his unlimited encouragement and kind guidance .

I would also like to thank my wife for her patience she has shown during preparation of this thesis .

In the last, I must express my thanks to Dr. Ghulam M. Rather, FRCSE & FRCSG ; for his scientific help .

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INTRODUCTION

Blunt abdominal trauma is a frequent cause of preventable death. Signs & symptoms are often subtle.
A third of patients with an initially benign abdominal examination may require emergency celiotomy. (Ernest et al, 1986).
Blunt abdominal trauma generally leads to higher mortality rates than penetrating wounds and presents greater problems in diagnosis. (Robert N. Mc Clelland et al,1984).
The traumatized person is a common daily presentation to any accident and in emergency departement. The incidence of trauma is gradually increasing with the increasing mechanisation and the increasing velocity of transport. (Darin, 1980).
The greatest difficulty in the management of blunt abdominal trauma is the diagnosis. This is largely due to masking of abdominal injuries by associated injuries. The most frequently associated injuries are head trauma, chest trauma, and fractures. Often the patient is unconscious because of alcoholism, drug abuse, shock, or associated head injuries. Another misleading factor in diagnosis, often not recognized, is that relatively trivial injuries may rupture abdominal viscera. The index of suspecion must be high, even in cases of supposedly minor abdominal trauma, if diagnostic errors are to be avoided. (Robert N. Mc Clelland et al, 1984).

definite place in the diagnostic armamentarium. Federle et al have recently described the benefits of computerized tomography in a series of 200 patients with blunt abdominal trauma. They reported no false negative CT interpretations and felt it was highly sensitive and specific for a wide variety of intraperitoneal and retroperitoneal traumatic lesions.

Additional studies evaluating, the CT scan will be forthcoming and will help elucidate its place in the evaluation of the patient with blunt abdominal trauma. Although some authors are now recommending laparoscopy, this technique as well as needlescopy provide a less than complete examination and can not be recommended at this time for the multiply injured patient. (Robert N. Mc Clelland et al 1984) .

Progress in surgical emergency care is certainely related to complex life saving procedures involving specialized teams; however, errors still occur during the initial clinical examination and may decrease the completeness or accuracy of initial assessment. (Murat et al, 1980). The problem of monitoring for the surgical patient is much more complex, because there is as yet no known single physiologic variable which can be used to warn against impending disaster.

Continuous rather than intermittent monitoring would be desirable for surgical patients if it could be performed inexpensively and noninvasively, because more information can be obtained from a variable which is measured in relation to time (Louis R.M., 1984).

The favourable experience in improvement of out-of-hospital resuscitation, along with the improvement of in-hospital care by the use of standardized procedures. (Murat J.E. et al, 1985), which maintain efficient management of the emergency department and helps to improve accuracy of diagnosis in polytrauma patients by use of a routine framework for systematic clinical examination. Using the form as a checklist ensures standardization of basic requirements and may extended by use of a computer system. (Jean E. Murat et al,1986).

Using the trauma score alone would have missed significant injuries in at least 8 to 36 percent of these patients using the injury severity score or clinical criteria.

Injury mechanism as a primary trauma triage criterion is an acceptable means of identification of potential injury for transport to a trauma facility (Daniel et al, 1986).

Initial care of the injured patient necessitates two

assumption, the first is that the patient may have more than one injury; the second is that the obvious injury is not necessarily the most important one.
Successful resuscitation requires an approach predicated on prioritizing injuries.

A simple method of perioritization includes the following schema and examples. It identifies four categories of injury.

1- Exigent : The most life threatening conditions, requiring instantaneous intervention (e.g. laryngeal fracture with complete upper airway obstruction).

2- Urgent : Those conditions requiring immediate intervention over a period of a few minutes (e.g. tension pneumothorax).

3- Emergent: Those conditions requiring intervention within the first hour (e.g. hemoperitoneum due to continued intra-abdominal bleeding).

4- Occult : Those conditions that are not immediately apparent but will subsequently require treatment (e.g. uretheral disruption). (Michael R. et al,1986)

Classification:-

Abdominal trauma can be classified according to:-

1- The causative agent of the trauma:-

the trauma inflicted on the abdomen can be penetrating injuries: e.g. stab wounds or gunshot wounds; blunt injuries: e.g. blast injuries, sport injuries or by motor-cars, and iatrogenic (those are caused as a result of use of certain diagnostic procedures.

2 - The anatomical site involved in the injury:-

a- Solid organs: Intra peritoneal; spleen and liver.
Extraperitoneal: suprarenal and pancreas.

b- Hollow viscera: gastrointestinal & genitourinary tract.

c- Great blood vessels.

3- The presence or absence of associated lesions:- like head injuries, thoracic injuries, limb fracture, spinal shock, or physiological troubles e.g. airway obstruction, pneumothorax, haemothorax, or tracheal injury. (Darin, 1980).

AETIOPATHOLOGY

Non penetrating injuries of the abdomen are most common due to severe crushes, as would follow from a heavy vehicle running over the abdomen.

Motor car accident are also a common cause of intra abdominal injuries.

Another type of violence is the sharp circumscribed blow due to a kick, punch, or the sudden impinging of any hard body against the abdominal wall.

Severe injury may also follow the strain on the visceral attachments consequent on a fall from a hight or a sudden trip-up causing a violent fall forward. (Zachary Cope, 1983).

When the body is travelling forward at a high speed and then it stops suddenly, the loosely attached viscera will continue to travel forward at the same speed resulting in severe injury, especially to the renal or splenic pedicles.

The root of the mesentry may be torn resulting in rupture to one or more of the mesentric vessels (Baylis et al, 1962).

Those injuries can be produced by military blast injuries e.g. from bombs, industrial accidents, house hold explosions, and personnel submerging in water. The injury produced depends on the blast space proximity and also on the detonation size. (Thomas et al, 1977).

When violence is applied against the abdominal wall; the kind of injury produced depends to a certain extent upon the preparedness of the patient for the blow and the consequent rigidity or flaccidity of the abdominal muscles. If the muscle is taken unwares more serious intrabdominal mischief is to be expected, whereas if the muscle be rigid it may mitigate or prevent injury of the underlying viscera.

Any injury of the abdominal wall, however slight, may be accompanied by serious (lesions of the viscera, and the latter may be seriously injured without any visible sign of injury to the abdominal wall.

The solid viscera of the abdomen (liver, spleen, pancreas and kidneys) are situated high up in the abdomen largely under cover of the ribs; the hollow tubes (intestines, bladder, ureter and stomach) are more exposed to injury.

Despite this, the solid viscera are more commonly injured than the hollow ones with the exception of the bladder which may be compared to a solid organ when it is filled with urine.

Solid viscera rupture more frequently than hollow ones because they are generally more fixed and lack compressibility and are therefore more easily impinged against

adjacent bony structures or torn from their attachments. Injury to solid viscera causes haemorrhage, injury to the hollow viscera usually causes peritonitis, whilst both types of lesion may be accompanied by shock. (Zachary Cope, 1983).

SPLEEN:-

The spleen is the commonest internal organ to be injured in blunt abdominal trauma. Usually a blow or crush injury to the abdomen or left lower thorax is responsible, but a fall onto a protruding object is another important cause. Splenic injury is frequently associated with fractured ribs and often with other internal damage. (Cochrane, 1980).

The spleen is more likely to rupture when pathologicaly enlarged (Geary et al, 1980).

Another common cause of splenic rupture is iatrogenic injury during other surgical operation. (Morgen, 1977).

The spleen has been injured in about 2 percent of patients whose operations involved viscera of the left upper quadrant. This injury generally permits repair but many require splenectomy. (Seymour Schwartz, 1984).

Rupture may occur in any age group and has been reported in the newborn to the elderly (Marquis et al, 1976).

The spectrum of lesions associated with trauma to the

spleen include linear and stellate laceration, capsular tears secondary to traction from adhesion or suspensory ligaments, puncture wounds by penetrating objects or fractured ribs, subcapsular intrasplenic hematomas, avulsion of the organ from its vascular pedicle, and laceration of the short gastric vessels within the gastro-splenic omentum.

In view of the extreme friability and vascularity of the organ, even minor trauma may result in significant bleeding, particularly if the spleen is enlarged or diseased.

Splenic injuries vary from simple transverse tears of the parenchyma to transverse cracks of the hilus, longitudinal injuries, subcapsular hematomas, or complete disruption of the organ and its vessels.

Splenic rupture may be:-

Acute rupture:-

which is attended by immediate intraperitoneal bleeding occurs in about 90 percent of the cases of blunt trauma to the spleen.

Delayed rupture:-

with an interval of days or weeks between the injury and intraperitoneal bleeding, is reported in 10 to 15 percent of the cases of blunt abdominal trauma.

This quiescent period, referred to as the "latent period of Baudet". This is probably related to a temporary

tamponade of a minor laceration or the presence of a slowly enlarging subcapsular hematoma which eventually ruptures.

Occult rupture:-

it is the term applied to traumatic pseudocysts of the spleen when injury to the organ previously has not been diagnosed. These appear in less than one percent of patients sustaining trauma and are generally caused by organization of an intrasplenic or parasplenic hematoma.

Splenosis :-

it is another pathological lesion related to splenic trauma, which is the result of autotransplantation of fragments of the traumatized spleen onto the peritoneal surfaces. Patients with splenosis are generally asymptomatic, but the lesions may stimulate adhesions which, in turn, lead to intestinal obstruction (Seymour Schwartz, 1984) .

LIVER:-

The liver is the second organ commonly inflicted in abdominal injuries.(Dickerman et al, 1981).

Hepatic trauma is usually due to road traffic accidents, spontaneous rupture may occur in the last trimester of pregnancy, usually complicated by toxaemia.