

THE SOUTH AFRICAN TRAUMA SCENE. OVERVIEW

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The South African population is approximately in the region of 45 million people of which 35 million are black, 1,3 million are Indian, 4,2- are colored and 4,3- are white. There are 4 large demographic concentration areas. Gauteng (place of Gold) with 9 million and the Western Cape with 5 million people are the two important ones which will be discussed mostly. There is a wide variety of peoples (11 different black tribes and the English and Afrikaner whites), which live in totally different worlds at different places and environments. Languages differ as well as ways of living. Trauma plays a major role in the society and is daily in the news and occurs mostly in the larger concentration of people. According to Interpol, South Africa was number one in rape and murder in the World in 1996.

MURDER

The figures are expressed in 100 000 of the population. In 2003, 66 people were murdered in Denmark which is 1,23 /100 000 of the population. The figure in the USA is 8,6 /100 000 of the population. In Gauteng and the Western Cape the figures are 61/100 000 and 79/100 000 of the populace. Attempted murders are 96/100 000 and robbery with aggravating circumstances are 656/100 000.

TRAUMA UNITS ADMISSIONS

We have received the statistics of admissions from Johannesburg, as well as the academic hospitals from the Western Cape namely Grootte Schuur and Tygerberg.

Johannesburg: Jan. 1215 and in Febr. there were 1247 admissions to the Trauma unit. Of these 111 and 124 were Gunshot wounds (4 per day).

Tygerberg 2003: During last year 19 639 were admitted and treated of which 3919 were stab-wounds and 726 were gunshot wounds (GSW)

Grootte Schuur 2003: 14000 patients were admitted and treated. Of these 60% was interpersonal and 30% were MVA and 10% other.

Out of a population of 5 million 33 000 trauma cases were admitted in 2003 of which 2226 were GSW.

There is an increase in both total numbers as well as severity noted. Males are involved in the greater percentage of cases and most of the admissions are at night. According to a study by NIMS (National Institute of Mortality Surveillance) 93/100 000 traumatic deaths occur per annum of which 39/100 000 were due to the use of firearms.

Motor Vehicle Accidents

500 000 accidents occur per year leading to injury and death of 28 000 persons. In 1998 9100 deaths occurred and 128000 injuries were reported costing the State the equivalent of 2 billion dollars.

Farming community

There are 30 000 active commercial farmers in SA. In 2001 147 farmers and their wives were killed in 1011 attacks. A slow increase in the incidence is evident over the past 10 years.

Car-jackings

In 1999 4638 car hi-jackings were reported.

TRAUMA IN THE UNITAS INTERVENTIONAL UNIT

As a private practice only cases that cannot be treated in the referring hospitals for various reasons are done in our unit.

HEAD TRAUMA

Blunt trauma: Apart from skull fractures due to blunt trauma vascular sequels are evident in our experience like A-V shunts of the external carotid artery branches both dural and others. The treatment will be discussed which include embolization with micro-catheters.

Penetrating trauma: The presence of knives lodged in the skull is not a seldom seen phenomenon. Proper vascular diagnosis would include arterial, capillary and venous phases with the foreign body intact (before removal) to demonstrate pathology and guide the way for treatment to facilitate atraumatic removal of the blade.

DISSECTION

Dissections may be caused by multiple conditions like inflammatory, traumatic, infectious, immune suppression, dysplastic vessels and even idiopathic . Stenosis may result or even frank occlusion with or without stroke as a result. Most dissections will clear with anti-platelet therapy.

IATROGENIC

Especially where maxillo-facial and ear, nose and throat procedures are complicated by hemorrhage the interventional radiologist have a definite role to play. When faced with massive intractable bleeding a simple procedure like localized pressure over the origin of the external carotid can be life saving.

PENETRATING INJURIES OF THE BLOOD VESSELS IN THE NECK

Stab-wounds as well as bullet-wounds are often the cause arterial and venous trauma in the neck. Stenting of the area of blood vessel wall perforation is a state of the art procedure with the view of maintaining cerebral blood supply. If however the patient's life is at stake occlusion may be the only way to go using either detachable balloons with or without coils. It is warranted to do test occlusion if the patient is in a state of co-operation. In an artery that is shredded to pieces surgery may be the way to go. According to the experience of the team in Tygerburg under Dr Danie du Toit the mortality rate of internal carotid artery penetrating injury is 31% and lead to stroke in 5%. In the common carotid trauma the mortality rate is 14% and stroke 14%. The brachio-cephalic injuries lead to 38% mortality and 6,5% strokes.

CHEST

Blunt trauma of the chest due to motor vehicle accidents are most probably the most common injury. In a series of 60 cases of EVAR over a 5 year period our vascular surgeons (who perform the EVARS as first clinicians in our unit) treated 4 cases of traumatic aorta rupture with stents. One case which was not done had the radiological appearance of an Ehlers-Danlos syndrome which was referred for open surgery. Stab-wounds are usually treated by under-water drains. The mortality rate in sub-clavian artery trauma is 8% and in axillary artery injuries 1%.

ABDOMEN

There is a tendency world wide to treat blunt trauma of the abdomen conservatively in cardio-vascular stable patients. Embolization of ruptured solid organs have pre-eminence to removal.

CT scanning with contrast is the modality of choice in the immediate post-trauma patient, time permits. Penetrating trauma warrants laparotomy (stabwounds) as well as careful angiography of the central abdominal vasculature. In cases of GSW of the abdomen melena due to pseudo-aneurysms of the SMA is treated by coiling after the existence of alternative collateral blood supply is proven to be by test occlusion. Iatrogenic trauma due to liver and renal biopsies is “quite common”. The use of micro-catheter systems play a major role in our department in the treatment of these patients. We make use of micro-coils in most of these patients. The presence of the rupture of the inferior vena cava after major blunt trauma of the abdomen has a very high mortality. The treatment of choice is conservative.

PELVIS

GSW leading to haematuria due to either direct perforation of the ureter and or bladder or due to A-V fistula is an interesting result of high velocity injuries. In cases of pelvic fractures embolization of major areas of hemorrhage can be life saving.

SUMMARY

The variety of the results of either blunt or sharp and penetrating trauma is so great that a great measure of suspicion of either venous or arterial penetration should be on the mind of the treating clinician. It is indeed surprising that many of our colleagues are oblivious of the possible treatments available in the interventional radiological fraternity and student rotational groups to the cath-lab may be of great importance in future clinical training of medical students.

As a basic dictum the preservation of solid organs should be maintained whenever possible.

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