**Complications of fracture**

د0عادل الهنداوي LICTURE-4

**General complications**

**1- Shock:** is inadequate tissue perfusion which if

persist, it will cause damage to vital organs. In # , the shock can be:

**Neurogenic shock:** due to pain, the blood will pool in the skeletal muscles. Treatment by splint the # & give analgesia like morphine or pethidine.

**Hypovolaemic shock:** is due to blood loss from bone ends, nearby soft tissue &injured blood vessels e.g. in a simple femoral shaft #, there may be 1- 1.5 liter of blood lost into the soft tissue of the thigh outside the circulation. Treatment arrest the bleeding & restore the lost blood.

**2-Crush syndrome:** may occur if a large bulk of muscles is crushed

 or if a tourniquet has been left unreleased for > 6 hours. After release,

the acid myohaematin (cytochrome C), resulting from muscle breakdown, will be released into the circulation &may block renal tubules or cause renal artery spasm, both may lead to acute renal failure. So to avoid that, the limb should be amputated above the level of the forgotten tourniquet and before releasing it. Antibiotic cover . Renal dialysis may be needed.

**3-Venous thrombosis & pulmonary embolism:** the incidence

of deep vein thrombosis(DVT) following major trauma or surgery

is about 30%and that of pulmonary embolism is about 5%,and 0.5% fatal.

**Causes of DVT:**

1-activation of factor 10 by thromboplastine released from tissue damage. 2-blood stasis.

3-endothelial damage of blood vessels.

4-increase number &stickiness of platelets.

**Risk factors**: 1-old patients. 2-cardiovascular disease.

3-Bed ridden patients.

**C/F**:- pain,tender,fever,tachycardia,homan's sign +ve

**Invastigations:**- 1- venography.

2- Doppler study.

**Prevention**:

1-early mobilization &exercise of the patient.

2-elevation of affected limb.

3-elastic bandage to prevent blood pooling.

4-anticoagulants like heparin.

**Treatment** of extensive DVT especially in thigh and pelvis:

1-bed rest. 2-heparin IV 10 000 IU 6 hourly for 5-7 days or

according to partial thromboplastin time ( 1.5- 2 of the normal),

then shift to warfarin with the dose according to prothrombine

time for 3 months.

**Pulmonary embolism:** if massive, will cause sudden death.

If small, it may cause chest pain, dyspnea and haemoptysis.

**4- Tetanus:** the tetanus organism require dead tissue to grow, so good debridement is important in prevention. The exotoxin is carried to the central nervous system via blood and lymphatics. Once it reach the anterior horn cells, it will be fixed their and cannot be neutralized by antitoxin.

 Clinical features: early tonic and later clonic muscle contraction, especially of the jaw, face, those near the wound &later, those of the

neck and back. If the diaphragm and intercostal muscles are affected,

 the patient may die because of asphyxia.

Prophylaxis: good wound toilet, active immunization using toxoid and booster dose after injury (those who were not immunized, are given human antitoxin serum).

 treatment of established tetanus: IV antitoxin, sedation, muscle relaxant

 (diazepam), antibiotics(penicillin) &if required, assisted ventilation.

**5- gas gangrene**: is caused by Clostridia perfringens(welchii), anaerobic gram +ve rods growing only in tissue with low oxygen tension, so the usual site is dirty wound with dead muscle that has been closed with inadequate debridement. Clinically, within 24 hours, the wound become swollen, painful, brown discharge with specific smell, gas in the tissue, rapid pulse, little fever and later, the patient may become toxic and comatose. teatment: excision of all dead tissue, IV antibiotic, hyperbaric oxygen may limit infection. In severe cases, amputation may required.

**6- fat embolism**: is thought to be due to liberation into the

circulation of fat globules larger than 10mm, the aggregation

of them may obstruct capillaries especially in the lungs.

CF: usually, a young adult, within 72 hours from injury, gets

slight fever, rapid pulse, dyspnea, confusion, skin petechiae

and in severe cases, respiratory distress and coma.

Diagnosis: is suspected if blood Po2 is < 60 mmHg.

Treatment by assisted ventilation, fluid balance, heparin to prevent thromboembolism and steroid to decrease pulmonary odema.