Shock in obstetrics

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Definition

- Shock is a critical condition an da life threatening medical emergency.
- Shock results from acute , generalized , inadequate perfusion of below the tissues needed to deliver the oxygen and nutrient for normal.

Classification

1. Hypovolemic or hemorrhegic
2. Septic shock
3. Cardiogenic shock
4. Distributive shock

Classification in details

Type	Causes
Hypovolaemic	Haemorrhage (overt or occult) Protracted vomiting (hyperemesis) Diarrhoea Diabetic ketoacidosis Peritonitis Burns
Septic	Sepsis, endotoxaemia
Cardiogenic	Massive pulmonary embolus
	Cardiomyopathies – myocardial infarction, hypertrophic obstructive cardiomyopathy, cardiac amyloid, myocarditis
	Obstructive non-structural – pulmonary embolism, cardiac tamponade, pulmonary hypertension, constrictive pericarditis
	Obstructive structural – valvular aortic stenosis, valvular mitral stenosis, idiopathic hypertrophic subaortic stenosis (aka hypertrophic obstructive cardiomyopathy), coarctation of the aorta, left atrial myxoma
	Dysrhythmias
	Regurgitant lesions – mitral regurgitaion, aortic regurgitation, ventricular septal defect, left ventricular aneurysm, ventricular wall rupture
	Blunt cardiac trauma – contusion
Distributive	Neurogenic – spinal injury, regional anaesthesia Anaphylaxis

Pathophysiology

- Untreated shock progresses through three stages as shown in below table.
- inadequate management allows shock to progressively worsen passing through until death occurs.

Stage 1 – Compensated

- Changes in blood pressure and cardiac output compensated by adjustment of homeostatic mechanisms.
- In healthy patients this category of shock may not require fluid replacement if the cause is removed.

Stage 2 – Decompensated

- Maximal compensatory mechanisms are acting but tissue perfusion is reduced.
- Vital organ (cerebral, renal and myocardial) function becomes impaired.

Stage 3 – Irreversible

- Vital organ perfusion is impaired. Acute tubular necrosis, severe acidosis, decreased myocardial perfusion and decreased myocardial contractility occur.
- The profound decrease in perfusion leads to cellular damage and death.

Diagnosis

- There are no laboratory test for shock
- A high index of susupicion and physical signs of inadequate tissue perfusion and oxygenation are the basis for initiating prompt management.
- Initial management does not rely on knowledge of the underlying cause.

Initial management

- Maintain ABC
- Airway should assured - oxygen 15lt/min.
- Breathing – ventilation should be checked and support if inadequate
- Circulation- (with control of hemorrhage)
  - Two wide bore canulla
  - Restore circulatory volume and reverse hypotention with crystalloid.
  - Crossmatch, arrange and give blood if necessary.
  - See for response such as , vital signs

Hemorrhegic shock

- Causes
- Antenatal
  - Ruptured ectopic pregancy
  - Incomplete abortion
  - Placenta previa
  - Placental abruption
  - Uterine rupture
- Post partum
  - Uterine atony
  - Laceration to genital tract
  - Chorioamnionitis
  - Coagulopathy
  - Retained placental tissue

Management

- As above measurement for basic shock management then treat specific cause.
- Laparotomy for ectopic pregnancy
- Sucction evacution for incomplete abortion .
- management of uterine atony
  - Optimise uterine tone- give uterotonic agent
  - Surgery- blynch suture, balloon catheter etc.
- Repair of laceration
- Management of uterine rupture
  - Stop oxytoin infusion if running
  - Continuous maternal and fetal monitoring
  - Emergency laparotomy with rapid operative delivery
  - Cesarean hysterectomy may need to perform if hemorrhage is not controlled.



Fig. 28.5: Diagrammatic representation showing rupture of the uterus following obstructed labor. The rent is in the lower segment extending to one side of the uterus. The margins are ragged and necrosed

Management of hemorrhegic shock contd…

- Management of uterine inversion.
  - Replacement of the uterus needs to be undertaken quickly as delay makes replacement more difficult.
  - Administer toloclytics to allow uterine relaxation.
  - Replacement under taken (with placenta if still attached)-manually by slowly and steadily pushingupwards, with hydrostatic pressure or surgically.

Acute uterine inversion



SEPTIC SHOCK

- This is sepsis with hypotention despite adequate fluid resuscitation.
- To diagnose septic shock following two criteria must be met
  - Evidence of infection through a positive blood culture.
  - Refractory hypotention- hypotention despite of adequate fluid resuscitation.

Predisposing factors for sepsis in obstetrics

- Post cesarean delivery endoture of memetritis
- Prolonged rupture of membranes
- Retained products of conception
- Cerclage in presence of rupture membraned
- Intraamniotic infusion
- Water birth
- Retained product of conception
- Urinary tract infection
- Toxic shock syndrome
- Necrotising Fascitis

Clinical features

- Symptoms of sepsis
  - Abdominal pain
  - Vomiting
  - diarrhoea
- Signs of sepsis
  - Tachycardia ,Pallor
  - Clamminess
  - Peripheral shutdown
  - Systemic inflammation
  - Fever or hypothermia
  - Tachypnoea
  - Cold peripheries
  - Hypotention
  - Confuion
  - Oliguria
  - Altered mental state

Special aspects in management of septic shock

- Transfer to a higher level facility .
- Invasive monitoring will inevitably be necessary
- Obtain blood culture , wound swab culture and vaginal swab culture.
- Start broad spectrum antibiotics .
- Removal of infected tissues .

Cardiogenic shock

- Failure of heart to provide adequate output lead to tissue under perfussion. In addition to under perfusion , blood and tissue oxygenation can also be exacerbated because of the back pressure on lungs that lead to pulmonary edema.
- Pregnancy puts progressive strain on the heart as progresses.
- Preexisting cardiac disease places the parturient at particular risk.
- Cardiac related death in pregnancy is the second most common cause of death in pregnancy.

Anaphylaxis

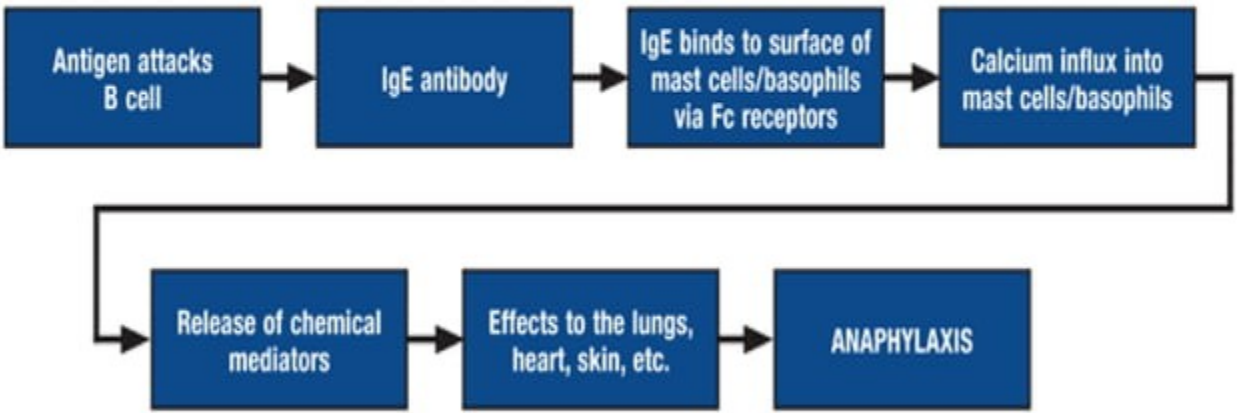
- A seriout is rapid onset as allergic reaction that is rapid onset and may cause death.
- It is a relatively uncommon event in pregnancy but has serious implications for bothmother and fetus.

Causes

- Pharmacological agent- penicillin group of drugs
- Insect stings
- Foods
- Latex

Pathophysiology

Figure 1. Pathophysiology of Anaphylaxis



Fc: fragment crystallizable; IgE: immunoglobulin E. Source: References 1, 8-11.

Clinical features

- Cutaneous
  - Flushing, pruritis, urticaria , rhinitis, conjunctival erythema, lacrymation.
- Cardiovascular
  - Cardiovascular collapse, hypotention, vasodialation and erythema, pale clammy cool skin, diaphoresis, nausea and vomiting
- Respiratory
  - Stridor , wheezing, dyspnoea, cough, chest tightness, cyanosis, condusion.
- Gastrointestinal
  - Nausea vomiting , abdominal pain , pelvic pain
- Central nervous system
  - Hypotention – collapse with or without unconsiousness, dizziness , incontinence
  - Hypoxia – causes confusion.

Management

- Immediate
  - Stop adm. of suspected agent and call for help
  - Airway maintenance
  - Circulation
  - Give epinephrine IM and repeat every 5-15min in titrated until improvement.
  - In severe hypotension intravenous epinephrine should be given.
  - Rapid intravascular volume expansion with crystalloid solution.
- Secondary
  - If hypotension persist alternative vasopressor agent should use.
  - Atropine if persistant bradycardia
  - If bronchospasm persist nebulize with salbutamol
  - Antihistaminics
  - Steroids
  - All patient with anaphylactic shock should reffered to critical care

Distributive shock

- In distributive shock there is no loss in intravascular volume or cardiac function.
- The primary defect is massive vasodilation leading to relative hypovolemia, reduced perfusion pressure , so poorer flow to the tissues.

Causes

- Spinal injuries- Neurogenic shock
  - Spinal cord injuries may produce hypotension and shock as a result of sympathetic nervous system dysfunction.
  - Resuscitation , vasopressor agent and atropine may required in management because spinal injury leads bradycardia due to unapposed vagal stimulation.
- Anesthesia -High spinal block
  - Basic ABC managemengt
  - Ventilation if needed

- Thank you