Septicaemia, Bacteraemia, Endotoxaemia October 16, 2013

**Septicaemia**

* Strictly meaning it is a clinical condition of varying manifestations
* The features are due to effects of a large number of pathogenic bacteria in the circulating blood
* Majority are associated with toxaemia and severe signs & symptoms

**Bacteraemia**

* Strictly used to refer to the presence of viable bacteria in the circulating blood
	+ May or may not cause symptoms or signs
	+ Confirmed by isolation of bacteria by blood culture

**Endotoxaemia**

* A condition which results from effects of bacterial endotoxin in the blood
* Characterized by:
	+ Fever
	+ Hypotension
	+ Shock & other manifestations

**Septicaemia or bacteraemia**

* Commonly used interchangeably to refer to the presence of bacteria in the circulating blood
* Other workers no longer use septicaemia
	+ Bacteremia is used to refer to either of the conditions
* Bacteria in the blood may be derived from
	+ Contaminated item
	+ Anatomic site that harbors the organisms either as normal flora or in an infectious process
* Entry of bacteria into the blood can occur
	+ Through breakages of b/vessels including capillaries or small veins
	+ Via phagocytic cells into the capillaries or the lymphatic system

**Manifestations**

* Are due to the effects of bacteria or bacterial toxins in the blood
* Include
	+ High fever
	+ N
	+ V
	+ Chills
	+ Shock
	+ Hypotension
* Together with the manifestations of the predisposing illness

**Organisms involved**

* Derived from localized bacterial infections including
	+ Peritonitis
	+ Pneumonia
	+ Abscesses of internal organs
* Part of generalized infections such as enteric fever (salmonella typhi, paratyphi A) or brucellosis (brucella mellitensis, B. suis)
* From other sources
	+ An unidentified site
	+ Heavily contaminated indwelling instruments such as urinary catheters or other foreign material in the tissues

**Types**

* Gram –ve bacteraemia
	+ Commonest causative agents belong to the family Enterobacteriaceae & Pseudomonas
	+ Other G –ve bacteria commonly
		- N. meningitides
		- Brucella spp
		- H. influenzae
* G +ve bacteraemia e.g. Staph aureus
* Mixed bacteraemia may be due to more than one spp of G –ve bacilli or mixed cocci & G –ve bacilli
* Bacteraemia due to anaerobic organisms
	+ Majority due to Bacteroides spp
	+ Other anaerobic G-ve bacilli
		- May be in association with abdominal or gynaecological infections or trauma
* Nosocomial bacteraemia caused by various organisms such as Kleb pneumonia, P. aeroginosa, Serratia marcescens
	+ Causative bacteria are associated with multiple antimicrobial agents resistance

Lab investigation

* Performed mainly to
	+ Isolate and identify the causative agent of septicaemia
	+ Determine the most effective antimicrobial agent for Rx

Specimens include

* + Blood for culture
	+ Pus or other fluids or infected tissue
* Specimen collection is performed with care to avoid contamination

Procedures

* Gram stain and microscopy on suitable specimens other than blood (taken directly for culture ∵ the organisms are very few. Direct culture is done ∵ the organisms will grow)

Cultures for isolation and ID

* Blood cultures incubation environment for the majority of specimens include
	+ Aerobic
	+ Anaerobic
	+ In additional 5-10% carbon dioxide
* Identification of the isolated organism by standard bacteriological methods

Antimicrobial susceptibility tests

* Agents & \*\*\*

Antimicrobial mx

* Adequate Rx with appropriate antimicrobial agents
* Rx of predisposing condition
* Prevention and Rx of complications

Possible complications

* Spread of infection to other sites
* Gram –ve shock due to endotoxin (occur when organisms are many)
* Complications of endotoxin shock