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OVERVIEW OF PATHOPHYSIOLOGICAL ACTION OF HOMEOPATHIC DRUGS IN BACTEREMIA

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ABSTRACT:

Bacteremia or bloodstream infection is presence of viable bacteria in the bloodstream. It is important to know physiological action and pathological action of drugs upon healthy human beings and is necessary in treating cases of poisoning. Article deals on the physiological action of homeopathic drugs in bacteremia.

BACKGROUND:

Bacteremia is one of the common pathological conditions in many diseases; example, typhoid, skin lesions, septicemia, pyaemia. Skin lesions are very common, and bacteremia is the cause of such lesions. Homeopathic medicines with their physiological actions known can be used as an alternative medicine that will reduce the need for antibiotics and help treat bacteremia.

OBJECTIVES:

(1) To define bacteremia, its etiology, pathophysiology, signa and symptoms along with investigation. (2) To explore the physiological action of homeopathic drugs in bacteremia.

INTRODUCTION:

Bacteremia means the presence of bacteria in the bloodstream. (1)

It can be caused by a variety of bacterial organisms like gram-positive (i.e., gram-positive bacteremia) or gram-negative bacteria (i.e., gram-negative bacteremia). Common bacteria causing bacteremia include Bacillus cereus, E. coli, pneumococcal bacteria, staphylococcus aureus and salmonella. (4)

In healthy individuals, small amounts of bacteria can be transiently introduced into the blood from a break in skin and soft tissue barriers (e.g., scraping of the skin) and minor medical procedures (e.g., dental procedures). (2)

Signs and symptoms of bacteremia include fever, chills, rigor, night sweats. These are all the constitutional symptoms. (2)

Bacteremia could have originated from a localised infection; hence signs and symptoms depend on primary site of infection. For example, in a urinary tract infection, individuals can experience increased urinary frequency, suprapubic pain, foul smelling urine and even dysuria. (2)

If bacteremia is not treated, it may progress to sepsis or septic shock. Individuals may experience hemodynamic instability including tachycardia, low systolic blood pressure (i.e., 22 breaths per minute), and signs of organ failure (like decreased urine output). (2)

Bacteremia may cause endocarditis, most commonly with staphylococcal, streptococcal, or enterococcal bacteremia and less commonly with gram-negative bacteremia or fungemia. (1)

Transient or sustained bacteremia can cause metastatic infection of the meninges or serous cavities, such as the pericardium or larger joints. Metastatic abscesses may occur almost anywhere. Multiple abscess formation is especially common with staphylococcal bacteremia. (1)

Physical examination for bacteremia will include assessment of general appearance, assessment of signs and symptoms (temperature, pulse, respiratory rate and blood pressure), assessment of response to antipyretics. Inspection for signs of local infection including skin soft tissue, bones and joints. It will also include evaluation for pneumonia. (3)

Bacteremia –primary modality of diagnosis is cultures including blood cultures, urine cultures, tissue cultures (from infected tissues). (1) Bacteremia is common after invasive procedures, particularly those involving indwelling devices or material. (1)

Bacteremia develops through:

1. Bacterial colonization: Bacteria may colonize mucosal surfaces or respiratory passages.
2. Immune system evasion: Bacteria can evade the body's immune system, or the immune response may fail to control the bacteria.
3. All bacterial infections are dependent on the host immune system, which is affected by their genetic make-up, as well as congenital and acquired deficiencies. Cellular innate and adaptive immune responses are responsible for initial microbe clearance, while the liver and spleen filter active bacteria in the circulating blood. (6)
4. Bacterial spread: Bacteria can spread from the initial infection site to other parts of the body, including the bloodstream.

Risk factors for bacteremia include:

1. Immunocompromised states, such as HIV, cancer, or chronic steroid use.
2. Elderly individuals.
3. Medical procedures that involve the skin or mucosa, such as surgeries or dental procedures.
4. Disrupted skin or mucosal surfaces, such as burns, trauma, or ulcers.
5. Indwelling catheters or ports. (7)

CASE STUDY:

A case study of a 3-day old male presenting with fever and chills in our tertiary care hospital, peripheral blood smear showed the presence of high total leucocyte count with neutrophilic leucocytosis and toxic granules in neutrophils. Blood culture after 24 hours showed presence of Staphylococcus aureus. (5)

A 20-year-old male presented to our tertiary care hospital with fever. Blood culture showed positivity for E coli. Peripheral smear showed neutrophilic leucocytosis with neutrophils showing toxic granules. (5)

Complications of bacteremia include Meningitis, Endocarditis, Osteomyelitis, Sepsis, Cellulitis and Peritonitis.

PATHOPHYSIOLOGICAL ACTION OF HOMEOPATHIC DRUGS IN BACTEREMIA

Homeopathic drugs have vast therapeutic use in various ailments for a better understanding of any disease, Pathophysiology of drug plays an important role in using them for therapeutic use. Patho-physiological action of drugs has not been in deeper study. More study should be done for therapeutic use of homeopathic drugs.

1. *Arsenicum Album*

Patho-Physiological action: Blood – The changes produced in blood are most marked and profound. The microscopical and chemical peculiarities of this fluid under the action of Arsenic are of great importance in relation to haemorrhages to the ecchymosis. Drs. Cutter and Bradford say: "Arsenic given in health causes a progressive decrease of the number of the red, and especially of the white, corpuscles." Symptoms: General anasarea, scarlatina, malignant sore, dry ulceration, itching and burning, hives or nettle- rash, leprosy, malignant carbuncles. No remedy can equal Arsenic for malignant pustules. (8)

2. *Baptisia*

Patho-Physiological action: Baptisia has special action: Blood – for septic; typhoid condition. As lymphatic system, secretions are putrid. Symptoms: For enteric fever and septic diseases with profound debility. (8)

3. *Carbo- Animalis*

Patho-Physiological action: Glands – secretions putrid.

Skin – with copper coloured eruption, acne and boils.

Diseases of mammae, testicles, parotid glands.

Glands—with very fetid discharges. Eruption on face and body. (8)

4. *Phosphorus*

Patho-Physiological action: Blood—Corpuscles dissolved hydraemia, ecchymosis. Blood if affected, becomes dark, losing power of coagulation, corpuscular elements for ecchymosis are almost universal and haematin crystals are occasionally found in the viscera. The result of microscopic investigation of blood offers important disclosures. Phosphorus brings an important change in the blood- discs decrease in consistency and the circumference is very

conspicuous. The disc becomes smaller, more extensive and can assume a different form. They change their formation in many ways. (8)

5. *Lachesis*

Patho-Physiological action: Blood—Rapid decomposition, haemorrhagic, asthenic fever. Produces haemorrhages from all mucus membrane. Asthenic inflammation of most malignant character, pyaemia is marked. Gangrene and typhoid condition. On the skin cellulitis erysipelas, abscess of lymphatic glands, carbuncle, malignant pustules, boils and bed sores. (8)

6. *Belladonna*

Patho-Physiological action: Blood— Belladonna's main element is Atropina which directs stimulant upon the cardiac inhibitory centre, arterial blood pressure which raises the pulse. Pulse is quick, full and there is excitation of vasomotor centre, on the skin causes copious perspiration. It has action on peripheral nervo-glandular apparatus. It produces dry, red and hot skin causing acute erysipelas inflammation. In malignant epidemic with intense blood poisoning, it can be used to relieve the symptoms. (8)

7. *Nitric Acid*

Patho-Physiological action: Blood— Broken down septic conditions. On the skin pustular ulceration and growths. The vitality of the blood is destroyed, and septic state is produced with general broken-down, cachectic condition. (8)

8. *Pyrogenium*

Patho-Physiological action: Blood— Products of sepsis. Typhoid fever, ulcerations. Urine contains albumin and casts. Septicaemia, distraction of blood elements, following abortion. Cardiac asthenia from septic conditions indicated in all cases of feve. Pyaemia, septicaemia. Pyrogen averts threatened Typhoid. (10)

9. *Mercurius*

Patho-Physiological action: Blood – Decomposition of fibrin, albumin, red globules. It can decompose the blood by some destructive chemical deprives it one-third of fibrin, one-seventh of albumin, one-third of red globules. It is seen considerable quantity of mercury administered for sufficient time will affect the quality and composition of the blood as seen in mercurial poisoning. The red globules are diminished in number and fibrin loses its

plasticity and proportion of water is increased. On the skin produces mercurial eczema, miliary rash, minute transparent vesicles. (8)

10. Calcarea Carb

Patho-Physiological action: Blood – It produces hydraemia, anaemia and general lack of red corpuscles with increase of water from imperfect assimilation of food. (8)

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