Resistance in Host-Parasite Interaction

Immune system provides varying degrees of protection or Resistance to microorganisms and cancer cells.

This system may impose barriers to invasion by microorganisms or selectively eliminate foreign invaders that do get into the body. **Specific immunity mechanisms** provides protection against particular microorganisms and their products. **Non - specific resistance mechanisms** are used against any and all disease causing agents.

Factors contributing to Non-Specific Resistance

1- Species or Racial Resistance :

Is determined by many factors including physiologic and anatomic properties of the particular animal species. This type of resistance is inheritable.

Exp: Lower animal resist to gonorrhea, typhoid fever, Changes in body temperature, diet, and stress can effect this type of resistance .

2- Mechanical and chemical Barriers:

Mechanical and chemical barriers like unbroken skin ,mucous membrane of Respiratory Tract(R.T.), Genitourinary system (G.U.T.), Nasal hair, Coughing and Sneezing reflexes, Tears and their associated washing action, Eye lashes, and

the various secretions and microbial contents of the different portions of gastrointestinal system .

Normal Flora (indigenous)

The normal flora of human includes all microscopic forms of life normally found in or on the body and referred to as Commensals. Such normal flora inhabitants may, under certain conditions, cause disease or other problems.

Microorganisms that take advantage of a host s weakened defenses to cause disease are known as Opportunists.

Habitats for indigenous microorganisms include: skin, mucous membrane, Upper Respiratory Tract (U.R.T.), mouth, lower intestine, and external and internal parts of reproductive system .

Development of indigenous flora begins with normal birth process and changes with subsequent exposures to other environments throughout the life time of the individual .

Benefits provided by indigenous M.O.s include :

a-Inhibiting foreign Microorganisms (M.O.s.)

b-Stimulating the production of antibodies .

c- Stimulating the production of protective Proteins .

d- Synthesizing vitamins .

The Immune System:

The components of normal blood and their roles in health and disease .

Blood can play an important role in the transmission, production, diagnosis ,cure and prevention of many conditions caused by microbes .

Blood consists of Red Blood Cells (R.B.c.s), White Blood Cells (W.B.c.s), (leucocytes) and platelets in a fluid called plasma .

When blood is removed from the body, the plasma can be separated from the cellular elements with the use of an anti-coagulant. If the blood clots, the fluid formed is called serum .

Erythrocytes, or R.B.C.s, are non-nucleated, formed in bone marrow, contain major, minor, and Rh factors, and appear as biconcave disks .

Leukocytes, or W.B. C.s are nucleated and can be classified into 2 groups :

a-Granulocytes, which contain distinct cytoplasmic granules .

b-Agranulocytes, which lack such granules .

Three types of granulocytes are found in blood smears

a- Eosinophils (red granules)

b- Basophils (blue granules) .

c- Neutrophils or polymorphnuclear leucocyte (orange granules) (PMNLS)

Agranulocytes consists of 2 general types :

a-Lymphocyte with rounded nucleus .

b-Monocytes larger with a kidney shaped nucleus .

- The lymphatic system consists of:

Lymphatic vessels , Lymph fluid, lymph nodes, lymphocytes.

This system participates in Transport of fatty acids, proteins ,and W.B.C.s ,and in the removal of foreign cells and their products ,W.B.C.s, and tissue debris accumulate at .sites of infection and injury

- The reticuloendothelial system (R.E.S.): Consists of a variety of cells that ingest and digest foreign and host substances.

3 -Phagocytosis :

It is the ingestion is one of the most important defenses against invading matter and subsequent digestion of foreign matter by circulating granulocytes, monocytes and fixed macrophages.

Some disease agents can escape the ingestion and intracellular destruction of phagocytosis.

4-Inflammation:

It is another defense mechanism of the body it can be produced by infectious disease agents and by irritants such .as chemicals heat, and mechanical injury.

The characteristic signs of inflammation are :

Heat, pain, redness, swelling, and loss of function. pus formation (is fluid formed by the remains of damaged tissue infections.it Hails and dead phagocytes microorganisms) Fever is elevation of body temperature.

5-Antimicrobial substances: this found in various animal fluids and tissue, like:

a-complement.
b- interferon
c- lysozyme
d-Phagocytin
e-Spermine

Complement is a complex group of proteins it is well known for its ability to react with a variety of antigen - antibody combination to produce important physiological reactions, including the destruction of various tissue cells, the destruction of bacterial cells, and the enhancement of phagocytosis.

Interferon, a protein normally produced in response to certain virus infections, has great potential for treatment of viral infections.it interferes with the formation viral proteins .

Conditions that Lower Host Resistance To Disease agents;

Radiation, Injury, Aging, Alcoholism, Circulatory disturbances, atmospheric pollutants, and complement deficiencies may lower host resistance to infectious disease agents.