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ASSIGNMENT TITLE: IMMUNODEFICIENCY DISORDERS

COURSE TITLE: MED SURG NURSING 2

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Question:

Immunodeficiency disorder is the absence or failure of normal function of one or more elements of the immune system there are two major types of immunodeficiency disorders primary& secondary

* Identify and briefly explain 5 primary immunodeficiency disorders
* Identify and briefly explain 2 secondary immunodeficiency disorders

ANSWERS

1. Primary immunodeficiency disorder

* Allergies

Allergic disorders are the result of hypersensitivity (excessive reaction to a stimulus) of the immune system to allergens(a type of antigen commonly found in the environment). Allergens maybe inhaled, injected, ingested, or contacted. There are four types of hypersensitivity reactions based on how tissues is injured.

TYPE1 REACTIONS occur immediately upon exposure to a specific antigen. Upon first exposure to allergen, IgF antibodies are produced they adhere to mast cells. When a subsequent exposure occurs, these cells attach to the antigen and activate the release of chemical mediators, such as histamine, bradykinin , and serotonine. These chemicals cause vasodilation enhanced capillary permeability, and bronchoconstriction

TYPE 2 REACTIONS are the destruction of cells or substances with antigens attached that either immunoglobulin G (IgG) or immunoglobulin M (IgM) senses a being foreign antibodies cause either lysis of the cells or accelerated phagocytosis hemolytic transfusion reactions are this type of reaction

TYPE 3 REACTION involves IgG immune antigen antibody complexes. It is a local reaction evident after several hours that may change from red skin to hemorrhage and tissue necrosis. Occasionally, this is noted after penicillin or sulfonamide use.

TYPE 4 REACTION is a delayed reaction involving sensitized T-lymphocytes coming in contact with the allergen contact dermatitis and transplant rejection are examples of this type of reaction poison ivy and poison oak are the most common causes of contact dermatitis

* Systemic lupus erythematosus (SLE)

Systemic lupus erythematosus is a chronic, progressive, incurable autoimmune disease affecting multiple body organs. It is characterized by periods of organs. It is characterized by periods of exacerbation (flares) and remission. Systemic lupus erythematosus occurs most commonly in woman during their child bearing years and is 2 to 3 times more common in African-american women. In clients with (SLE), abnormal B-lymphocyte cells produce autoantibodies that destroy body cells. Immune complexes are formed and circulate in serum, causing inflammation and tissue damage in the skin, brain, kidney, lung, heart, or joints. Production of these autoantibodies, is influenced by genetic predisposition medications, infections, stress, and sunlight (ultraviolet light rays)

No single test is conclusive for a diagnosis the American college of rheumatology has established criteria for (SLE). These criteria include malar rash(over cheeks) discoid rash, photo sensitivity, oral ulcers, arthritis, sororities (pleuritis or pericarditis);excessive protein or cellular casts in the urine, seizures or psychosis, hemolytic anemia, or leukopenia, or lymphopenia, or thrombocytopenia; and positive for LE cells, and anti-DNA antibody ,or anti-5m, or a false- positive syphilis test. If four or more of these criteria are present, a client is diagnosed with SLE.

* HIV/AIDS

Although allergies are hypersensitive immune responses and autoimmune diseases literally have the body attacking itself, acquired immunodeficiency syndrome (AIDS) is a disease that causes an inadequate immunological response by the body the human immunodeficiency virus (HIV)

May be acquired and time after conception. The human immunodeficiency virus (HIV), are ho-virus that causes acquired immunodeficiency syndrome (AIDS).

Following exposure to HIV and an incubation period of 2 to 4 weeks, some individuals, but not all, will experience flulike symptoms such as fever, sweats, headache, myalgia, neuralgia, sore throat, GIT distress, and photophobia. Many people, if tested at this time, will test negative because antibodies maynot yet be present in the blood. In 2 or 3 weeks these symptoms disappear, infected individuals are very infectious during this period with large quantities of HIV present in genital secretions.

Myasthenia Gravis

Is an autoimmune disease characterized by extreme muscle weakness and fatigue caused by the body’s inability to transmit nerve impulses to voluntary muscles. The is thought that clients with MG develop antibodies that clients with MG develop antibodies that act to decrease he number and effectiveness of acetylcholine receptor sites at neuromuscular junctions. Voluntary muscles are most commonly involved, especially those innervated by cranial nerves. Muscle weakness increases during periods of activity and improves after a period of rest.

Severity of symptoms varies in mild conditions known as Group1 ocular myasthenia, only the eye muscles are involved. As severity increases, symptoms of Group2 generalized Myasthenia develop facial, neck, skeletal, and respiratory muscles become affected.

The thymus gland is enlarged in most clients.

Anti-Ach receptor antibodies are produced in this organ. Mg affects men more frequently than women, with the onset of symptoms after age 50. Periods of remission and exacerbation occur, usually during the first few years.

There are three possible complications respiratory distress, myasthenia crisis and cholinergic crisis. Clients need to be carefully monitored for early signs of respiratory distress, such as dyspnea, tachypnea, tachycardia and diaphoresis.

Myasthenia crisis is an acute emergency characterized by increased muscle weakness, difficulty swallowing, chewing, or talking, and respiratory distress. It occurs in newly diagnosed clients who are not responding to anticholinesterase medications following infections, surgery, or delivery of a child.

Cholinergic crisis is the result of an overdose of anticholinesterase medications. Physical symptoms of both myasthenia crisis and cholinergic crisis are the same. An edrophonium chloride (tension) test is used to differentiate between the two tension is administered intravenously ;symptoms of clients experiencing a myasthenia crisis will be relieved within seconds, whereas clients in cholinergic crisis will show no response. Atropine is administered to counteract the effects excessive amounts of anticholinesterase drugs. The treatment goal of both is restoration of normal respiratory functioning and alleviation of symptoms.

* Transfusion reactions

Blood components, such as whole blood, packed or frozen red blood cells (RBCs), leukocytes, platelets and plasma, maybe administered to clients when their own bodies are incapable of manufacturing them at a rate required to maintain vascular homeostasis. Any client receiving blood products that are allergenic, or from a donor of the same species, may develop a transfusion reaction. For this reason, some clients are arranging to have their own blood collected, saved, and available for infusion if needed, during or following elective surgeries. This known as an autologons blood transfusion immunological reactions do not develop with this type of blood transfusion.

There are five types of transfusion reactions –

Febrile non hemolytic, allergic urticarial, delayed hemolytic reactions are the most common and occur in clients who have had previous blood transfusions as a result of an antibody antigen reactions to WBCs. Systems may develop soon after the infusion has started or up to 5 to 6 hours after completion fever is the classic symptoms and may be accompanied by chills, nausea, headache, hypotension, and respiratory problems. Clients who have allergic urticarial reactions develop skin rash during or within 1 hour following the transfusion.

A delayed hemolytic reaction may occur days to weeks following the transfusion. The client’s hemoglobin level falls because of incompatibility of RBC antigen.

This type of reaction is often misdiagnosed and thought to be related to the condition that created the need for blood replacement rather than a transfusion reaction. An acute hemolytic reaction is potentially a life-threatening situation. Symptoms resulting from the incompatibility of ABO groups, usually occur during the first 15 minutes of administration, but can develop anytime during the transfusion, clients complain of chills, nausea, and back pain, fever, drop in blood pressure (hypertension), vomiting, hematuria, or oliguria maybe observed, as the condition progresses, chest pain, dyspnea, anuria, and shock develop. Anaphylactic reactions, although rare, are also life threatening symptoms of acute gastrointestinal malfunction and cardiovascular and respiratory collapse develop moments after the transfusion has started.

* Latex allergy

The latex proteins can enter the body through the skin and mucous membranes, intravascularly , and by inhalation. The corn starch powder on gloves absorbs the latex proteins and becomes airborne when the gloves are put on or taken off. From the air, the latex proteins may be inhaled or maybe in contact with the skin and mucous membranes. Anyone, client or healthcare worker, who after exposure to latex develops red, watery , itchy eyes, sinus or nasal irritation hives, shortness of breath dry cough , wheezing, chest tightness, or flushing, tachycardia, and hypotension should be suspected of latex allergy .

Latex allergy has the potential to induce a life threatening anaphylactic reaction with repeated exposure avoidance of latex products is of utmost importance synthetic versions of products are often available. An individual product maybe “latex free but an environment is not latex safe” only when items of latex that might come in contact with the allergic individual are removed.

1. 2 SECONDARY IMMUNODEFICIENCY DISORDERS

* Pulmonary opportunistic infections

Examples-

HISTOPLASMOSIS

Histoplasmosis is an infection caused by fungus histoplasma capsulation .the fungus has been isolated in bird droppings, dirt from chicken coops and caves. The spores from the fungus are introduced into the body by inhalation. Histoplasmosic is not specific to the lung. In the most clients with HIV disease, histoplasmosis is disseminated(spreadout). Histoplasmosis should be suspended if the person presents with fever of uncertain origin, cough and malaise.

The diagnosis is confirmed by culture or biopsy of the bone marrow, blood, lymph nodes, or skin initial treatment of histoplasmosis is usually IV amphotericin.

Other pulmonary opportunistic infections include –

Pneumocystis carinis pneumonia, histoplasmosis and tuberculosis

* Gastrointestinal opportunistic infections

Cytomegalovirus

Cytomegalovirus (CMV) belongs to the herpes virus group. Thus it shares the same phenomena of latency and reactivation. The virus lies dormant in tissues waiting to be reactivated in the immune compromised client. The potential for infection with CMV is increased during two periods. The perinatal period through the preschool years, and later during the sexually active years

CMV causes disease by destroying the brain lung,, retina and gastrointestinal tract from the oral cavity to the perianal area.CMV can be life –threatening fo persons with suppressed immune systems. Persons with HIV infection or AIDS may develop severe infections, including CMV retinitis that can lead to blinders signs and symptoms of CMV include weight loss, fever, diarrhea, malaise. The diagnosis of CMV is based on microscope identification of CMV from specific organs such as the brain lung, liver, or adrenal gland. Ganciclovir sodium( cytovene) is the drug of choice for treating individuals infected the CMV maintenance therapy is required to prevent relapse. Intravenous foscarnet sodium (foscavir) has been approved as an alternative therapy.

Other gastrointestinal opportunistic infections include