Practical Immunology
Lab : 9

AL-Mustaqbal University

College of Medical Technology

Department of Medical Laboratory Technology

Practical Immunology 2024

LAB 5-7

Stage 3rd

A.Lecture :

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Immune system cells

All types of immune cells are produced from hematopoietic stem cells stem cells in the bone marrow, which produce two types of parental cells:

1. myeloid Progenitor cells
2. lymphoid Progenitor cells.

Myeloid cells are responsible for producing cells Monocytes, macrophages, and dendritic cells, Langerhans cells, and cells with large nuclei megakaryocytes and granulocytes (eosinophil's , basophils and neutrophils). As for the lymphoid cells, they are: Responsible for the production of B cells, T cells, and natural killer cells (NK).

Specialized as well as adaptive or specialized acquired immunity.

Cells functioning in the innate or inherent immune system Phagocytic cells include macrophages and mononuclear cells monocytes, white cells, neutrophils, natural killer cells(NK cells), Mast cells, eosinophils, basophils, and platelets. The receptors of these cells are molecular pattern recognition receptors PRRs (receptors recognition pattern) can recognize molecular patterns extensive molecules present on the surface of the pathogen are called pathogen-associated molecular patterns (PAMPs).

Cells linking the innate immune system to acquired immunity

There is a special series of cells called antigen-presenting cells

APCs (presenting cells) consist of a heterogeneous population of cells consisting of blood cells White leukocytes, which play an important role in innate immunity and a link with acquired immunity by

participating in the activation of helper T cells, it also includes incident cells dendritic cells and macrophage cells. It is one of the most important features that distinguish antigen-presenting cells APCs are the gene expression of distinct cell surface molecules called histocompatibility complexes (MHC) The second class of major histocompatibility complex (MHCII). B lymphocytes also play a role similar to that of incident cells, although they are not They are considered part of the inherent immune cells. In addition to this, there are cells that express these complexes (MHCII (such as epithelial thymic cells) which may play A similar role for incident cells as well.

T-cell consist of two type of cell :

1. Cytotoxic (CD8)
2. Helper (CD4)
3. Suppressor (regulatory).

Anti streptolysin O test (ASO titer)

Anti-streptolysin O (ASO titer)

Man normal range less than 200

Woman normal range less than 200

Children normal range less than 100

It is an analysis that measures the amount of antibodies in the blood that the body produces in response to a type a streptococcus infection.

When the body is infected with type A streptococcus bacteria, it secretes antibodies called anti-streptococci (Anti streptolysin o) to resist the toxins secreted by this bacteria.

Streptococcus bacteria are the bacteria responsible for sore throat, or some skin infections such as pyoderma, or cellulitis, which may lead to some complications if not treated effectively such as glomerulonephritis, or rheumatic fever, and may sometimes develop into serious complications such as high blood pressure, acute kidney failure, heart damage, or tissue swelling.

Symptoms of rheumatoid fever

Rheumatic fever includes the following symptoms and signs:

High body temperature.

Swelling of the joints, especially the ankles, elbows, knees, and wrists, and sometimes the swelling moves from one joint to another.

Rapid jerky movements.

Small, painless nodules.

Chest pain.

Constant fatigue.

Difficulty breathing.

Pain in various joints of the body.

Symptoms of kidney infection

Symptoms of kidney infection include the following symptoms and signs:

Low urine output.

Dark urine.

Swelling in some parts of the body.

Fatigue and exhaustion.

Presence of blood in the urine.

High blood pressure.

Principle

Is a qualitative slide agglutination test. The reagent contains an aqueous suspension of polystyrene latex particles which are sensitized with streptolysin O. These particles agglutinate in the presence of ASO present in patient serum.

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Requirements

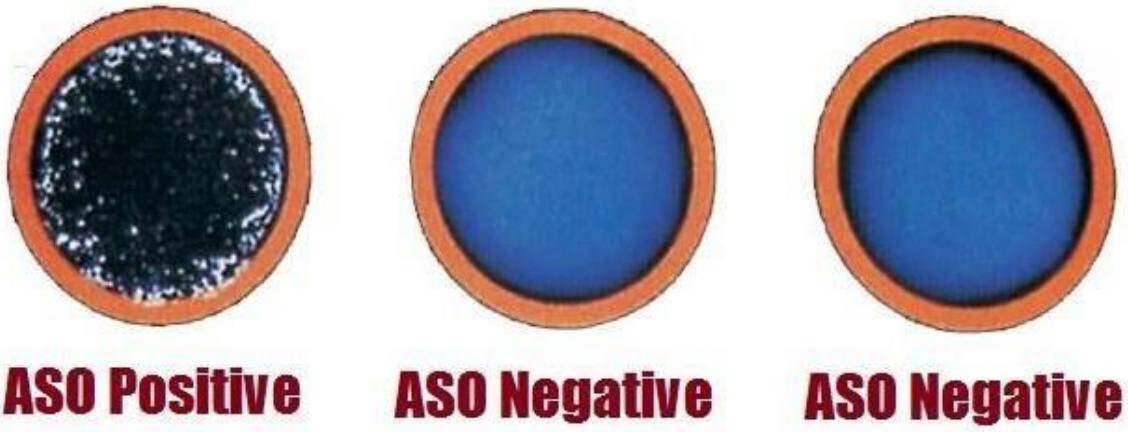
1. Latex ASO reagent kit.
2. Normal saline.
3. Patient serum.
4. Positive and negative serum control.
5. Test plate or dark slide.

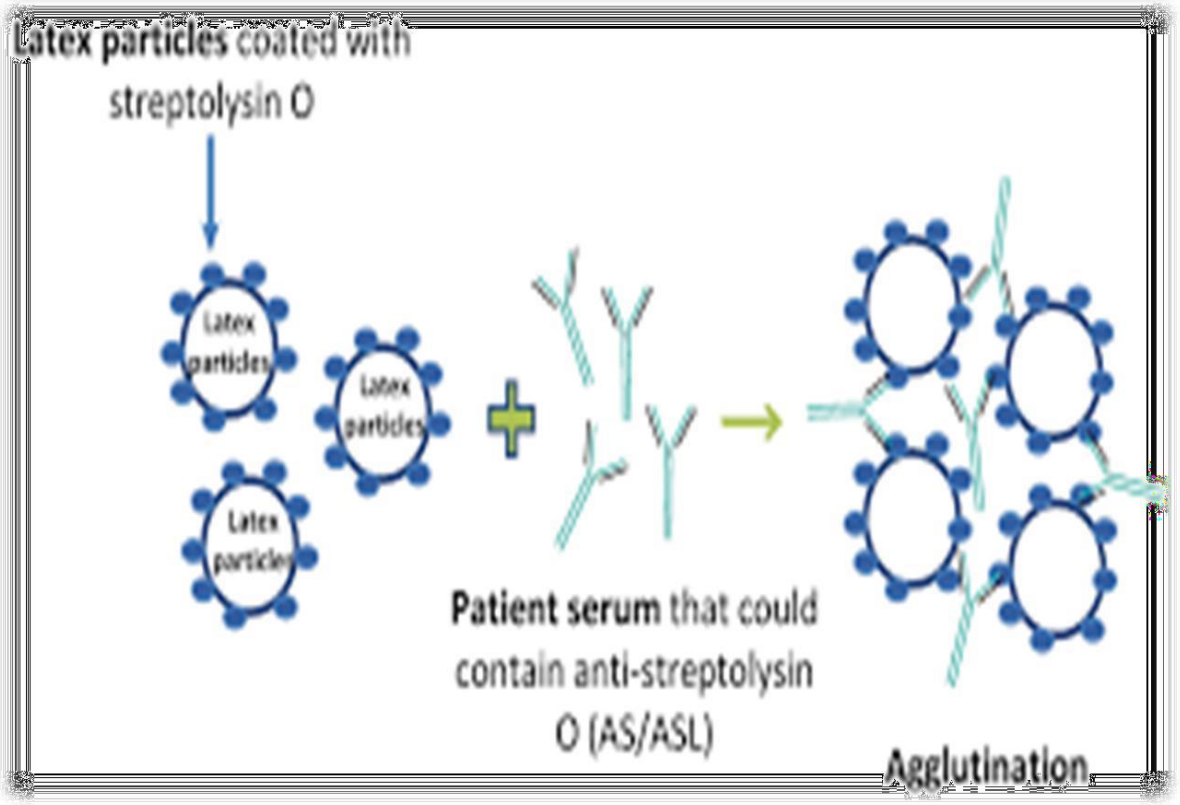
Procedure

- using isotonic saline prepare serial dilution of the patient's serum (1/2,1/4,1/8,1/16,1/32,1/64 so on)
- Do same as above mention using each diluted serum.
- The serum ASO concentration can then be calculated approximately by the multiplying the dilution factor.
- If the agglutination titre appears at 1/4 the approximate serum ASO concentration is 4X200= 800 IU/ml

***Rising titer indicates active and progressive *streptococcal* infection.**

***Declining titer indicates recovery of patient.**


ASO Positive
ASO Negative
ASO Negative


Latex particles coated with streptolysin O
Latex particles
Latex particles
Latex particles
Patient serum that could contain anti-streptolysin O (AS/ASL)
Agglutination