The human spleen after trauma
Leemans, Rob

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GLOSSARY AND ABBREVIATIONS
Accessory spleen: A congenital extra spleen somewhere in the peritoneal cavity.

Antibody: An immunoglobulin molecule which interacts only with the antigen that induced its synthesis in lymphoid tissue or with antigen closely related to it. It is a part of the immunological defence system.

Antigen: Any substance inducing the formation of antibodies and reacting with the by them induced antibodies. Antigens may be soluble substances (toxins and foreign proteins) or particulates (bacteria and tissue cells). It is something inside the body that does not belong there.

AST: Autotransplanted splenic tissue.

Autotransplantation: Taking a piece of tissue or an organ from one part of the body of a subject and inserting it in another localisation in the same individual.

B-cells: See B-lymphocytes

Billroth’s cord: A non-endothelialized reticular meshwork in the red pulp of the spleen consisting of fibrils and interstitial cells with a large population of monocytes and macrophages.

B-lymphocytes: "Bursa-equivalent" lymphocytes, thymus-independent (migrating to tissues without passing through or being influenced by the thymus) and matures into plasma cells that synthesise humoral antibody.

B/T-ratio: The ratio between B- and T-lymphocytes.

Cell-mediated immunity: Specific acquired immunity in which the role of T-lymphocytes is predominant.

Complement: A complex series of proteins in serum that interact to combine with antigen-antibody complex producing lysis when the antigen is an intact cell. They are also involved in the generation of anaphylatoxin, the inflammatory response, neutralisation of viruses and participate in other biological activities as antibody-mediated immune lysis, phagocytosis, opsonization and anaphylaxis. There are two pathways of complement; the pathway known longer is called: classical, the one discovered later: alternative.
Ectopic: Located away from normal position.

EST: Ectopic splenic tissue.

ELISA: Enzyme-linked immunosorbent assay. Method for detecting antigens or antibodies utilising enzyme-substrate reactions.

Fc-fragment: One of the two segments (the constant part): not involved in antigen recognition of the immunoglobulin molecule.

Fc-receptor: Receptor on a variety of cells for Fc-segment of immunoglobulins.

Fc-receptor test: A test to measure the presence and capacity of Fc-receptors in the spleen. As Fc-receptors mediate phagocytosis this test is an indirect method to determine the presence of phagocytising cells.

Follicular dendritic cells (FDC): Cells that form a network around and in between the lymphocytes in the GC. The origin is not clear but the appear to differentiate from reticular mesenchymal cells. They are able to present antigen and play a role in formation and differentiation of B-cells.

F-value: The ratio of two chi-square values in the Fc-receptor test. Normal (with a biexponential curve) it is 0-0.1 and with a monoexponential curve it is higher.

Germinal centre (GC): The centre of a secondary lymphoid follicle LF with mainly B-lymphocytes; plays a main role in B-cell selection, isotype switching and affinity maturation.

Granulocytes: Polymorphonuclear leukocytes with abundant granules in the cytoplasm. They have a mainly phagocytosis and a (bacterial) killing function.

Helix pomatia (HPH) haemocyanin test: Test for evaluating the primary general humoral immunological response (T-cell dependent), after vaccination with HPH.

Helper T-lymphocyte: T-lymphocyte that co-operates with a B-lymphocyte in antibody formation.

Immune response: Specific response to antigenic stimulation. A first contact gives primary response and a second contact secondary response.
Immunity: Insusceptibility to the invasive or pathogenic effects of foreign micro-organisms or to the toxic effect of antigenic substances. It can be divided in specific and non-specific immunity.

Immunization: Administration of an antigen in order to bring about an immune response.

Immunodeficiency: An ineffective immune response due to an intrinsic abnormality of B- or T-lymphocytes (primary) or to loss or destruction of antibody and/or lymphocytes (secondary).

Immunoglobulin (Ig): A protein endowed with known antibody activity (e.g. IgG, IgA, IgM), functioning as specific antibody and responsible for the humoral aspects of immunity.

Immunology: Branch of biomedical science concerned with the response of the organism to antigenic challenge.

Interendothelial slit: The slits between the endothelial cells of venous sinusoids in the red pulp of the spleen through which blood flows to enter the venous system. Cells and other elements of the blood can be filtrated by these slits.

Kupffer cell: Macrophage of the liver.

Leucocyte: White blood cell. Major classes: granulocytes, lymphocytes and monocytes.

Lymphocytes: A mononuclear leucocyte, chiefly a product of lymphoid tissue that participates in humoral and cell-mediated immunity. Major classes: B- and T-lymphocytes and natural killer cells.

Lymphoid follicle (LF): Globular structures in the spleen in the white pulp, comprising a specialised reticular meshwork consisting preponderantly of B-lymphocytes and their accessory cells. In the first order the LF is a primary LF with small and medium-sized lymphocytes, after contact with an antigen it becomes a secondary LF with a GC and differentiated large B-cells.

Lymphokines: Soluble protein mediators released by sensitised lymphocytes on contact with antigens, play a role in macrophage activation, lymphocyte transformation, and cell-mediated immunity.
Macrophage: Highly differentiated mononuclear phagocyte that engulfs and destroys particles.

Marginal zone (MZ): The filtration bed in the outer border of the secondary lymphoid follicles, forming a zone between the white and the red pulp. It is very richly vasculated and has sinuses.

Monocyte: Cell of the mononuclear phagocyte lineage.

Mononuclear phagocytes: Widely distributed macrophages, found in different tissues, and antigen-presenting cells (presenting antigen to lymphocytes).

Mononuclear phagocytic system (MPS): A dense network with monocytes, macrophages pursed to capture any antigen that has slipped through the nets of other trapping mechanisms. Formerly it was called the reticulo-endothelial system (RES).

Myelocyte: Immature cell of bone marrow, precursor of polymorphonuclear leukocytes.

Natural killer cell: Lymphoid cell capable of killing a variety of nucleated cells without antigen stimulation.

Nitroblue tetrazolium test (NBT): Test for evaluating the phagocyte function of granulocytes. Nitro-blue tetrazolium will be reduced to blue formazan by active granulocytes.

Non-specific immunity: Immune response that do not involve antigenic stimulation of antibody formation or cell-mediated immunity; it includes phagocytosis, inflammatory response, lysozyme and interferon activity and chemical and physical barriers to infection.

NST: Non splenic tissue.

OPSI: Overwhelming postsplenectomy infection.

Opsonization: Binding of antibodies or complement on the surface of particles to increase their susceptibility to phagocytosis.
Periarteriolar lymphocyte sheath (PALS): The part of the filtration bed in the spleen that phagocyte function of granulocytes. Bacterial populations in microtitre trays will be phagocytosed by active granulocytes and the total number of bacterial colonies will be reduced.

Plasma cell: Differentiated B-lymphocyte that synthesises immunoglobulin.

Polymorphonuclear leucocyte: White blood cells having a deeply lobed (3-5) nucleus a way that it appears to be multiple and having cytoplasm containing fine inconspicuous granules. These cells are also called granulocytes. They are capable to migrate outside the blood vessels and kill and phagocytose antigens and dead cells.

Primary immune response: The specific antibody response after a first contact with an antigen.

Properdin: Protein of the alternative complement pathway; binds to C3 convertase and stabilizes it.

Red Pulp: Spleen tissue consisting of reticular meshwork with sinusoids which is related to the MPS. Performs filter function with large blood flow through this compartment

Reticuloendothelial system (RES): See: mononuclear phagocytic system.

Reticulum: A meshwork of reticular cells and reticular fibres, in the spleen constituting filtration beds.

Secondary immune response: The specific antibody response after a second contact with an antigen. This response will be faster and with a higher antibody production than in the primary immune response.

Specific immunity: Immune response against a particular disease or a particular antigen (e.g. pneumococ).

Splenosis: Multiple spontaneous implants of splenic tissue throughout the peritoneal cavity (after a trauma).

T-Cells: See T-lymphocytes.
T-cytotoxic cells: Subsets of T-cells, when activated, acquire the capacity to lyse target cells carrying antigens. They may also secrete certain lymphokines.

T-helper cells: Are a subset of T-cells which secrete a number of hormonelike proteins (lymphokines) to control and co-ordinate other cells participating in the immune response.

T-lymphocytes: Thymus-dependent lymphocytes (see also under B-lymphocytes) which can suppress or assist the stimulation of antibody production in B-cells in the presence of antigen and can kill such cells as tumour and transplant tissue cells. They are responsible for cell-mediated immunity and immunological memory. See also under a T-helper, T-cytotoxic and T-suppressor cells.

T-suppressor cells: T-cells secreting, upon activation, molecules that inhibit the response of other cells.

Tuftsin: A tetrapeptide originating from the Fc-fragments of IgG which stimulates the phagocyte activity of polymorphonuclear leucocytes (granulocytes).

White pulp: Reticular meshwork with selective filters, lymphocytes and accessory cells, setting them up to carry out specific immune responses. It consists of PALS, LF and MZ.

References


