

Mammilations

Macrophage Activity Identified from Analysis of the Iris

Mammilations are either static or transient nodules which can appear raised from the iris stromal surface, not only in and around the collarette, but also occasionally in the ciliary zone.

Macrophage Discovery

In 1884, Ilya Mechnikov, a Russian bacteriologist discovered certain white blood cells which he termed 'microphages' and 'macrophages'. The names derived from the Greek meaning 'little eaters' and 'big eaters'. Mechnikov recognised that these cells had the ability to ingest and neutralise antigens, pathogens and cellular debris found in the bloodstream and mesenchyme. They release an enzyme that can 'swallow' antigens, pathogens and foreign proteins. Whilst the name macrophages has not changed, they are now known as white blood cells or leukocytes. Macrophages are also referred to as 'phagocytes'.

Macrophage Production

Macrophages are originally produced in the bone marrow and are also derived from the blood system found in lymph nodes, mesenchyme, connective tissue, red pulp of the spleen and the mucosa of the respiratory, urinary and intestinal tracts. They are located in most tissues; resident macrophages may remain in tissues for years, whereas others recirculate through secondary lymphoid tissues.

There are two varieties of macrophages - monocytes; which circulate freely in the blood and inhibit and destroy pathogens directly, and Fixed Tissue macrophages; these are abundant in the connective tissue of the spleen, lymphatic nodes and thymus gland. The fixed tissue cell is involved in the phagocytosis of bacteria of foreign substances within the body, if they have bypassed the usual immune filters.

Basically, macrophages are the vacuum cleaners and the waste disposal department of the immune system - ingesting everything that is not considered normal or part of the body from bacteria to cellular debris. Macrophages thrive in an oxygenated environment, and their activity is retarded a stagnant environment.

Immunoglobulins

Another important function of macrophage activity is that antigens are prepared for their final elimination by the action of the plasma cells. The antibodies secreted by the plasma cells are known collectively as immunoglobulins (Ig's). There are five classes of Immunoglobulins, each with an important job to accomplish.

IgM a large molecule, is the first antibody reproduced in response to a pathogen. It is known as the major immunoglobulin in primary immune responses where it acts very quickly. Certain levels of IgM in the blood serum is a defining factor in identification of infection by Epstein-Barr virus (EBV) and the onset of ME or Chronic Fatigue. Located in the blood, it is a helper in the stimulation of phagocytosis. IgM, together with IgG, activate the classical pathway of Complement.

IgG is the most prevalent antibody in the bloodstream. It is transferred from the mother to the foetal bloodstream, bestowing immunity on the foetus and vulnerable new born infant by IgG activated macrophages. IgG is produced in massive amounts during viral or bacterial infection, autoimmune conditions and inflammation. It is the main circulatory immunoglobulin in secondary immune responses. Both IgG and IgM are key players in phagocytosis.

IgA is found in the saliva, tears, sweat, tonsils, colostrum and breast milk. The IgA antibody found in saliva to protect the mouth from bacteria which causes gingival ulcers, is reduced when one is under stress. IgA can activate the alternative pathway of Complement activation. IgA is the main immunoglobulin secreted by the mucus membranes, to stop invaders or toxins reaching the body's fluids, including the lymph. The response of both IgA and IgG are not as rapid as that of IgM, but they have more sustained effects.

IgE is the antibody involved with allergic reaction, for example hay fever or food allergies; such as sugar intolerance or gluten sensitivity. Most of the body's IgE is bound to mast cells and basophils, and upon cross linkage of the IgE, dMast cell degranulation occurs in such cases. The role of Immunoglobulins may not be so specific, there may be more complex interactions which are warranting further research. IgE also has a main role in the antiparasitic response.

IgD is the immunoglobulin we know very little about to this date, other than it exists and is expressed onto virgin B cell membranes. there is a very small amount of IgD in serum, but large amounts of IgG.

Macrophages in Iridology

In Iridology terms, macrophage markings have been studied in-depth; pre-dominantly in Italy through Siegfried Rizzi and his research on *Diabetes* and through Dr Daniele Lo Rito *et al* with studies at the University of Senn in Italy on the evolutionary markers for Rheumatoid Arthritis. More recently, studies in England have given further clarity and understanding to these iris signs, which are also known as mammilations.

Macrophage markings take the appearance of small star balls or domes significantly raised from the iris stroma and scattered throughout and around the collarette in the intestinal and deep circulatory areas. Unorthodox illumination and lighting angles are usually necessary for observation. Fibre optic lighting systems are preferable. Microscopic analysis is essential. From 30 to 56 x magnification. Brown and mixed irides make viewing easier; indeed most cases of these signs are found in these constitutional types. Although lymphatic types do present macrophage signs; they tend to be a lot more difficult to identify with any clarity. The above magnification and illumination protocols above are suggested in these cases.

Photography of blue iris displaying macrophage marking has proved troublesome; with very mixed results to date. Mixed and Haematogenic constitutional types prove easier to record. The signs themselves indicate macrophage activity within the intestines and circulation (blood and lymph). They illustrate a stimulation of the immune system. Sometimes an over stimulation, as in the case of autoimmune conditions.

The following clinical conditions can be connected to these signs - intolerance of sugar(s), Diabetes, TB, Vaccination reaction, hypoglycaemia, autoimmune conditions such as SLE, plus as an important marker in the development of Rheumatoid Arthritis. According to studies by Lo Rito *et al* at University of Senn; when found in superior frontal section of the iris a slow or moderate progression can be identified. When the mammilations, which look like dome or star ball shapes, appear in all areas we have severe progression of the disease. The deeper the mammilations penetrate then the evolution of the disease will be severe and speedy.

Mammilations are signs, from studies to date, which can increase or decrease in number and even disappear completely (although this may be temporary) from the iris - according to the status of the disease for patient and the therapy or therapies used.

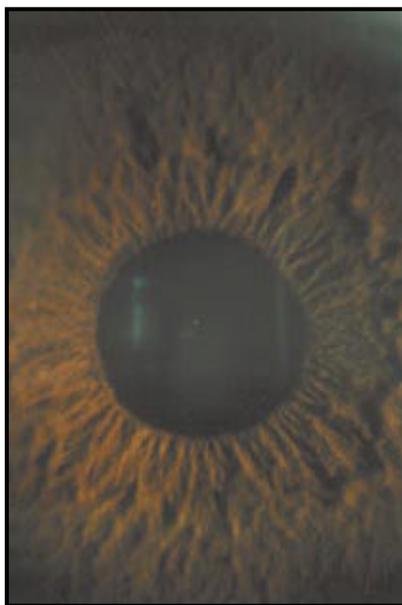
It is prudent to note that mammilations within the iris have occasional associations with ocular and oculardermal melanocytosis (Nevus of Ota), Neurofibromatosis - 1, Axenfeld-Rieger anomaly and Peters' anomaly.

Research of macrophage markings also confirms earlier findings; by those such as Rizzi, University of Senn plus the original topography for the zones of the RES and the blood from the pioneering French Iridologist Gilbert Jausaus. From microscopic observation it is possible to see a great many mammilations accumulate in areas for the blood and the RES.

The RES is the Reticulo-endothelial system, made up of macrophage cells which stimulate phagocytosis of foreign and toxic materials, bacteria, cellular debris, damaged tissue and also the development of immunity. Again, the RES is active within the mesenchyme, Kupffer cells of the liver which line the sinusoids, lymph, spleen, bone marrow and thymus. The topography for these areas if you are not familiar with the work of Jausaus, or his contemporaries like Guidoni, are located at 1:30 - 3:30 in the right iris and 8:30 - 10:30 in the left iris. For both of these locations the area covers the ciliary zone from the edge of the collarette (which I have personally seen to be more pertinent to the immune system) to the iris limbus. A clear pattern emerges in relation to the type of conditions you are likely to see with the appearance of mammilations within the structure of the iris. We are obviously looking at a predominance of autoimmune or hypersensitivity type reactions of the immune system.



Mammilations



Mammilations after vaccine reaction in haematogenic iris



Lymphatic iris with intestinal mammilations in ulcerative colitis

Appearance of Mammilations - Constitutional Breakdown

Constitutional Type	% incidence 2003	% incidence 2000
Haematogenic	32%	30%
Mixed Biliary	51%	51%
Lymphatic	17%	19%

Appearance of Mammilations - Analysis of Conditions

Condition	% incidence 2003	% incidence 2000
Sugar intolerance/ Dysglycaemia	28%	38%
Diabetes mellitus	5.33%	4%
Systemic Lupus Erythematosus	10.66%	4%
Ulcerative colitis	3.33%	n/a
Rheumatoid Arthritis	14.70%	8%
Vitiligo	2.66%	n/a
Vaccination reaction	24.66%	29%
Antibiotic allergic reaction	10%	n/a
Tuberculosis (family history)	0.66%	1%

* Revised from Advanced Iridology Research Journal Volume 1, March 2000