

The Thymus therapy

Background

First of all a few words on the milestones in the investigation of the thymus gland.

One of the first extensive studies of the thymus gland was the work carried out in 1905 of the Swedish Professor HAMMAR. In 1924 THURNER homogenized thymus gland in a saline solution and subsequently filtered it. In 1929 NIETSCHKE saturated a thymus suspension with an acetic acid solution and isolated large molecule protein by an iso-electrical potential. Yet another five years later ROWNTREE succeeded in obtaining a thymus gland extract by heating with sodium chloride at 68°C. By precipitating large molecule, decanting and supernatant he was able to establish a pH of approximately 3.5. An interesting theoretical consideration of the thymus gland and its therapeutic significance was published in 1938 by the Swedish Doctor SANDBERG. From then onwards scientific interest in the thymus gland grew quickly. This can be seen by the rapid growth in the number of scientific publications on the subject. Hardly 40 scientific articles on the anatomy and physiology of the thymus gland can be found under the entry thymus for the 1938 edition of the Index Medicus. By 1947, however TORDA and WOLFF had succeeded in making a thymus extract first with acetone and then with ether and the Index Medica records 160 publications for 1948. The following year (1949) SANDBERG published a thorough study of the thymus gland (1) and started experimental and clinical trials with thymus extract in 1950.

Ten years later the number of articles appearing in conventional medical publications had risen to 340 (again as measured by the Index Medicus). By 1968 this figure had topped the 1000 mark while by 1979 there were no less than 8000 (2). Nowadays no less than two hundred laboratories and clinics have thymus research programmes.

Currently scientists consider that the thymus has a central role in the immunological defence mechanism (3), including macro and microphagocytosis. The gland is at its most active while the organism is young (until the age of 30), producing, under the influence of the thymus factors, the T and B-lymphocyte clones which, due to their "ability to remember" until life ends, will be responsible for the body's defence against bacteria, viruses, fungi, protozoa and parasites.

Thymus therapy, which involves the administration of thymus extracts, may have an effect at three different levels:

1. - positive immunological reaction by immunological substances

2. - supply of thymus hormones by the introduction of fresh hormone
3. - positive effect on the disease by enzyme systems.

1. Influence on the immunological processes

As we saw in the chapter on immunity (4), the thymus gland has a direct effect on the lymphocytes, improving their helper function and lymphocin production (including lymphotoxine) as induced by Transfer Factors-Mediators, on their suppressor function and on their T-cellular "killer" function and it is not difficult to see how the introduction of thymus extract supports cellular, humoral and phagocytic defence. This mechanism is discussed further in the chapter on immunity where the role of the thymus gland and hormones in the body's own cellular and humoral defences is described in detail.

2. Supply of thymus hormones by treatment with fresh hormone.

The injection of thymus extract is also an implantation of thymus hormones and we have already discussed this in detail in our chapter on cell implantation. In that chapter indeed special attention is paid to thymus (cell) implantations.

3. Enzyme activities in thymus extracts.

It has primarily been the German physiochemist, Professor Doctor ZOCH, who pushed ahead with research into enzyme activity in SANDBERG's (calf) thymus extracts.

The object of his study was 1) to discover which enzymes in the thymus extract stimulate the lymphocytes and 2) to investigate the way in which these ferments are involved (or participate) in the various stimulation processes of the lymphocytes. Up till now he has only been able to complete the first part of his study in full. He has succeeded in carrying out an elementary, pioneering, enzymological study of SANDBERG's thymus extract and reported on his work at the Second Symposium of the "Internationale Gesellschaft fur Thymusforschung"(5). Research into the relationship between this enzyme activity and lymphocyte activity and coagulation is being continued.

In his study are included the metabolism of purine and pyrimidine metabolism, peptidase and other enzymes. Certain ferments of the purine and pyrimidine metabolisms are indeed of primordial importance in the mitogen stimulation of the lymphocytes (6). GIBLETT and associates attribute many congenital forms of severe immune deficiency to a shortage or lack of adenosine desaminase in the blood (7).

According to the findings of HOVI (8) and CARSON and associates (9) adenosine desaminase plays an important role in lymphocyte proliferation and lymphocyte blastogenesis. For example, the maturation process of forerunners of human lymphocytes is prevented by administering Coformycin - a specific adenosine-desaminase inhibitor.

Peptidases were also included in the investigation because they are responsible for the hydrolytic breakdown of oligopeptides and polypeptides into amino acids and play a role in the organism in the conversion by hydrolytic separation of amino acids or peptide components from a biologically inactive propeptide or proprotein into respectively a biologically active peptide or protein with enzymatic or hormonal functions. The other enzymes in which ZOCH was interested in his research were those enzymes and esterases which are important to the metabolism of amino acids and carbohydrates.

1. Desaminase of purine and pyrimidine metabolisms

Research into the desaminase activity of various purine and pyrimidine bases, with nucleosides and nucleotides as substrates revealed pronounced desaminase activity of adenosine and desoxyadenosine.

How important this high adenosine and d-adenosine desaminase is in (calf's) thymus extract still remains to be investigated. ZOCH puts forwards the hypothesis that this adenosine desaminase activity is related to lymphocyte stimulation.

2. Peptidase

In the light of typical separation activities on the dipeptide and tripeptide substrates used in the experiment, ZOCH was able to demonstrate the presence of the following ferments in (calf's) thymus extract :

- a leucinaminopeptidase, which mainly hydrolyses leucylpeptides;
- a non-specific aminopeptidase;
- a prolinase which breaks down low polypeptides;
- a prolinase which attacks aminoacylprolinpeptide (gly-pro);
- an elastase.

According to ZOCH further research should be carried out to show the connection he assumes between the existence of this peptidase activity and lymphocyte stimulation.

3. Other enzymes

The most striking discovery made in this investigation of esterase and enzymes involved in amino acid and carbohydrate metabolisms is the relatively high value of alkaline phosphatase, which is important for the hydrolysis of organic phosphate. ZOCH has also shown another easily measurable activity of thymus extract, that of sensitive oxydoreductases such as glutamate-dehydrogenase (GLDH), lactatedehydrogenase (LDM, important for anaeroreglycolysis) and glucose-6-phosphatedehydrogenase. The latter is of primordial importance in the pentosephosphate cycle, from which pentose materials for the biosynthesis of DNA and RNA develop.

Therapeutic successes

SANDBERG himself, the pioneer, has undeniably the most experience with calf's thymus extract therapy. He noted very good objective improvements, measured by scientific and laboratory methods, as well as subjective progress. Dr. PESIC of Bad Harzburg, who also has had years of therapeutic experience, also reports successes. Thymus therapy has also been put into large scale use in numerous biological (holistic) total therapies such as in the KMT of MVA, etc., so that the therapy is extraordinarily efficient, if not essential in the treatment of cancer. It should be noted that thymus therapy can also be successfully used for the treatment of other chronic, immune deficiency and autoimmune diseases apart from cancer, including asthma, chronic bronchitis, allergy, diabetes mellitus, complications in diabetes (such as ocular hemorrhage and retinopath), rheumatism, polyarthritis, arthritis, lupus erythematoses, hernia, angina pectoris, hypotonicity, circulatory disorders, arteriosclerosis, psoriasis, damaged liver cells, kidney parenchyma damage, prostatadenoma, impotence, climacteric, parodontosis, and cataract.

Thymus therapies

1. SANDBERG's fresh total thymus extract from calves

The total thymus extract is an organic extract from calf's thymus gland. It is not a monosubstance but a complex of biologically active components among which are numerous hormones and other immunological substances. It is extracted from fresh thymus glands from young calves less than 4 years old and used after homogenization, extraction and decanting into dosage bottles. The

fresh extract thus obtained is opalescent and often contains small white particles which may also be injected.

Various preparations

Dr. SANDBERG's THX: not available commercially as such. Made up and used by the therapist.

THY-MEL-L: freeze-dried extract (according to the SANDBERG process) produced by Dr. M.C. PESIC in the

Instituut fur Gesamte
Thymusforschunge.V.
Schmiedestrasse 9
D-3388 Bad Harzburg 1
tel. (05322) 2033/2034

TFX: produced following the SANDBERG process by

Pharmazeutische
Werke Polfa
Jelenia Gora
Poland

Thymus organ extract from Dr. Kurt Mulli's Nachfolger: This is a proteolysis obtained from the thymus gland in a sterile aqueous solution with a polypeptide content kept constant by a special fermentation process. It is extracted from thymus glands of young calves, is free from proteins and is thermo stable. This extract is usually combined with the lymph substance "injectio lymphatica" from the Firm of EKF-Labor.

Footnotes :

(1) SANDBERG, E., The Bovine Cervical Thymus and its Involution, State Institute of Human Genetics and Race Biology, Upsala Lakareforen, F·rhandl. N.F. Bd. LIV, part 3-4, 1949.