signs of the disease appear. Indeed, many such well-differentiated carcinomas have been reported at necropsy from patients who died from other diseases or old age. The prognosis for a well-differentiated thyroid carcinoma is usually good, especially in patients under 40, with a primary lesion less than 2·5 cm in diameter and no involvement of lymph nodes.[10]

The introduction of iodized salt would go far to reduce the incidence of thyroid nodules. In communities where the iodine intake is high the existence of a solitary nodule always raises much stronger suspicions of malignancy than in Britain or, for example, those areas where goitre is frankly endemic, as in South America.

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New Knowledge of Lymph Nodes

The mammalian lymph node is an organ of complex structure, yet to the histological novice it appears to be composed of a mass of small darkly staining cells all looking remarkably alike and jumbled together into an indecipherable maze. Nothing could be further from the truth, and the vast amount of study applied to these structures in recent years has disclosed something of the diversity of its component cells and the beauty of their architectural arrangement.

Like all other tissues of the body the lymph nodes can become involved in a variety of infectious or neoplastic processes, and until the recent upsurge in immunology morbid anatomists interested in the lymphoid tissues largely confined their diagnostic activities to these two. But the lymph nodes are mainly, if not exclusively, the anatomical sites of the immunological apparatus, and show their immunological potential when unstimulated and the extent of their response when exposed to antigenic stimulation.

The study of these organs has been bedevilled by the absence of any generally accepted nomenclature and the use of hybrid terms denoting morphological and functional attributes. The World Health Organization has encouraged an attempt to avoid these difficulties, and the result is the publication of "A proposal for a standardization system of reporting human lymph node morphology in relation to immunological function."[1] To help pathologists report their observations in uniform style the authors include as an appendix a list of all the features to which attention should be given and approximately quantified as a slight, medium, or pronounced deviation from the normal in either direction. Perhaps few histopathologists will follow every detail in this appendix, but it represents an ideal which, if attained, would revolutionize the clarity of their reports and enhance their significance to clinicians interested in the immunological status of their patients.

The value of the proposed system is that it is relatively simple and it recognizes recent advances in lymph node morphology. These have been both cytological and architectural. For instance, the non-proliferating precursors of all immunologically active cells have the morphology of small lymphocytes; when they are stimulated to reproduction and differentiation they acquire the common appearance of large lymphoid cells. Though the way these cells will develop can usually be foretold by their ultrastructure as seen under the electron-microscope;[2] light microscopy is inadequate for that.

Architecturally the main recent advance has been the finding that the cortex consists of two zones differing in the origin of their cells and in function.[3] Firstly, the outer zone, referred to without qualification as the cortex, consists of a zone of small lymphocytes subjoining the subcapsular sinus. Within this zone denser accumulations of lymphocytes constitute the so-called primary follicles. In the antigenically stimulated lymph node the centre of these follicles becomes occupied by large lymphoid cells intermingled with phagocytic cells containing conspicuous nuclear debris, presumably derived from other lymphoid elements. This accumulation of large pale-staining lymphoid cells constitutes the germinal centre, but why its development should be accompanied by the death of cells, as judged by the amount of nuclear debris, is one of many unanswered questions about lymph nodes. Secondly, the inner cortical zone is now referred to as the paracortex and is mainly composed, when quiescent, of small lymphocytes. The postcapillary venules are a characteristic feature of this area; they can be readily recognized by their cuboidal endothelium and the many lymphocytes within their walls. The small lymphocytes of this area belong to the long-lived circulating pool,[4] and anything interfering with this pool or its circulation results in loss of cells from this area. Neonatal thymectomy has provided evidence that the lymphocytes of the paracortex are of thymic origin in contrast to the cells of the cortex itself. And, as would be expected from different origins, the two cortical zones differ in their immunological reactivity: the cortex itself, and especially its follicles, are concerned with production of humoral antibody, the paracortex with cell-mediated responses.[5]

In agreement with these conclusions are the findings in some of the recently described immunodeficiency diseases. For example, in the Swiss type of agammaglobulinaemia, in which both humoral and cellular immune reactions are strikingly impaired, the lymph nodes show a correspondingly impressive depletion of lymphocytes in both the cortex and paracortex, both of which are almost entirely replaced by reticulum cells and fibroblasts. In the Bruton type of immunodeficiency, in which despite hypogammaglobulinaemia the cell-mediated responses are largely retained, the paracortex with its content of small lymphocytes is still recognizable though the cortex and its follicles are virtually absent. It is precisely this ability to correlate function with structure that justifies the extra effort involved in the newly proposed system of reporting on the morphology of lymph nodes.

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