AN ATLAS OF ALZHEIMER’S DISEASE.
Edited by Mony J. de Leon.

Alzheimer’s disease is of increasing importance for society, particularly in view of the ageing population. Studying the pathology, genetics and biochemistry of Alzheimer’s disease is an increasingly optimistic exercise; real advances are being made into the understanding of both the genetic and biochemical mechanisms of pathogenesis and accurate disease diagnosis. Basic scientific research hopefully will provide the building blocks for both therapeutic interventions and improved clinicopathological understanding of the diagnosis. The literature is rapidly expanding; indeed, from a PubMed search of ‘Alzheimer’s disease’ over the last two decades there has been about a 20-fold increase, and over the last three decades a 200-fold increase, in the number of papers on the disease. This book sets out to ‘highlight the current clinical, anatomical and pathological knowledge bases that have shaped our understandings of Alzheimer’s disease.’ The frustration that the knowledge base is still so incomplete, particularly as relates to providing any immediate hope for treatment for sufferers, has led the authors to encourage research activity in this field by donating the royalties of the book for a young investigator research award.

Although there exists a plethora of books on Alzheimer’s disease, this atlas illustrates predominately the radiological and pathological aspects of the disease in the context of its clinical stages. The nature of an atlas format permits a succinct, highly visual and concise synopsis of the area of interest rather than lengthy theoretical debates and methodological details, which is advantageous for the more general reader. The work is also very well referenced and as such provides the base for a more detailed survey of the field.

This multi-author atlas is primarily a North American effort. The contributors are based mainly in New York and only one chapter is written by European authors (Chapter 5). The book begins with an examination of the clinical stages of the disease from a global and functional perspective. As the only clinical chapter, this confirms the more pathological bent of the atlas, although the clinical reader may have been interested in more examination of recent advances in formulating the diagnosis of Alzheimer’s disease. Imaging is well covered with a chapter on PET and SPECT (Jagust) and another on MRI studies of the medial temporal lobe (de Leon, Convit, Tarshish, DeSanti and Bobinski). Imaging work has become the interface between in vivo studies of the disease sufferer and the pathological post mortem examinations, and is therefore an exciting method for examining the links of the structure and functional aspects of the disease, both clinically and theoretically. The functional imaging chapter is brief, but well illustrated. The chapter on MRI work is a detailed account of the progress made by the investigators in New York on hippocampal and temporal lobe linear and volumetric measurements in Alzheimer’s disease.
and the relationship with memory. This is a significant contribution to an interesting area, focusing on the changes in the medial temporal lobe in Alzheimer’s disease that may be used as a marker of the disease, although issues regarding specificity of these findings have not been addressed.

The pathological sections start with a clear description of the neuropathological stages of the disease by Braak and Braak, well known leaders in the field. It is here that the atlas format is exceptional, with clear diagrams and good quality pathological figures that compliments the text. There are two chapters on amyloid, the first essentially descriptive, covering the pathological appearance of beta amyloid (Wegiel and Wisniewski), and the second discussing amyloid protein biochemistry, the mutations affecting the metabolic pathways of beta amyloid and the contribution of this understanding of the metabolism of amyloid to theories of pathogenesis in Alzheimer’s disease (Chapter 8, Wisniewski and Frangione). The pathological features of neurofibrillary tangles, a description of the mechanisms of tau hyperphosphorylation and a schema for the pathogenesis of this process are covered in Chapter 6 (Iqbal and Grundke-Iqbal). These chapters are clear, illustrations of the histopathological appearances, including electron micrographs, are helpful, and flow charts of proposed mechanisms augment the detailed text. However, an integration of the pathogenic models of neuronal death from both the amyloid and tau camps would have been helpful. The final chapter is on the genetics of Alzheimer’s disease (Poirier, Dea and Danik). There is some repetition between the genetics chapter and Chapter 8 on amyloid, with one table on mutations on the beta-amyloid precursor gene effectively reproduced twice, but these are minor points.

In general, I regard this as a sound introduction to the current position in understanding the anatomical and pathological aspects of Alzheimer’s disease. The diagrams and figures are particularly welcome, as imaging studies, neuropathology and the biochemistry and genetic aspects of the disease all are clarified with illustration. The figures also provide a deceptively large amount of information and the text itself is easy to read. Have the authors fully completed their remit? Well, they have admirably summarized the current view of the anatomical and pathological aspects of the disease and related this with the imaging work to the living subject. However, my criticism would be that they have not succeeded in highlighting the many advances in the clinical domain.

In summary this text is an excellent and superbly illustrated account of the current knowledge of the pathology of Alzheimer’s disease, and as such deserves to be widely read.

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