Tyrosine crystals in salivary gland tumours

The interesting paper by Thomas and Hutt¹ has drawn attention to a less familiar feature of some salivary gland tumours, particularly pleomorphic adenomas. Tyrosine crystals have been occasionally reported in salivary gland tumours.^{2,3,4} There seems to be no similar reported observation of tyrosine deposits in a ceruminous gland tumour of the external auditory meatus and the present case report might be of some interest both by its rarity and because it has caused some diagnostic difficulty.

The patient was a fit and healthy man aged 42 years who presented with a smooth lobulated tumour in the right external auditory meatus, which was excised. The patient, an itinerant Irish labourer, could not be followed further. Microscopy of the neoplasm showed some unusual features and, in particular, the presence of crystalline material caused diagnostic problems.

The late DA Osborn diagnosed a ceruminous gland tumour of adenoid-cystic or cribriform pattern and compared the crystalline deposits with the 'corps oviforms' described by Robin in glandular tumours.⁵ Further revision of the sections has identified the crystalline deposits as an example, not previously observed, of tyrosine crystal deposition in a ceruminous gland tumour.

Microscopy shows details of randomly distributed crystalline deposits surrounded by myoepithelial cells. The needle-shaped individual crystals can be clearly seen forming sheaves and flower-like petals best demonstrated in sections stained by van Gieson's stain (Figure). Under polarised light the deposits were birefringent and displayed Maltese crosses. The surface was covered by squamous epithelium and there were ceruminous glands underneath.

Thackray and Lucas⁶ have described these rare crystalline deposits in five pleomorphic adenomas of the parotid gland; four in black patients and one in a white person. Thomas and Hutt¹ have confirmed the greater frequency in black patients. Nochomovitz and Kahn⁴ found six cases in a series of 121 pleomorphic salivary gland tumours seen at the University of Cape Town in 20 years but do not mention the race of the patients affected. Our patient, as the first patient in whom this feature has been noted² was white.

Osborn⁶ described similar tyrosine-like

Multiple flower-shaped tyrosine crystals surrounded by myoepithelial cells deposited in a ceruminous gland tumour. van Gieson's stain (original magnification $\times 566$)

inclusions as the 'corps oviforms' of Robin in a pleomorphic adenoma of the soft palate in a 34-year-old white man and in a cribriform adenocarcinoma of the lachrymal gland in a 32-year-old white woman.

Some tumours and also normal salivary glands are known to excrete tyrosine, an amino acid playing a significant role in melanin metabolism. Nevertheless the effect or cause of the tyrosine deposits in glandular tumours has remained obscure. It ought to be better known in view of the diagnostic difficulty that may arise.

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⁴ Nochomovitz LE, Kahn LB. Tyrosine crystals in pleomorphic adenomas of the salivary gland. *Arch Pathol* 1974;**97**: 141-2.

⁵ Robin C. *Gazette Hebdomadaire de Med et Chir* 1856;**3**:35-7, 84-8. (cf Osborn DA MD Thesis, 1974)

⁶ Osborn DA. Tumours of the subsidiary mucous glands. University of London MD Thesis, 1974.

Book reviews

Atlas of Renal Pathology. Current Histopathology Series. Vol 2. RA Risdon and DR Turner. (Pp 150; illustrated; \$42.50.) JB Lippincott Company. 1981.

The Atlas of Renal Pathology is a welcome addition to the pathologist's bookshelf, though it supplements rather than replaces existing reference books on the interpretation of renal biopsies. It contains an excellent collection of pictures, some quite beautiful. They are mainly histological and most of high technical quality, aimed at helping diagnosis and understanding of non-neoplastic renal disease. The text consists of captions to the pictures and also succinct essays on the topics of the chapter headings such as "Renal Infection" and "Glomerulonephritis".

This is a book for postgraduate use, though I have found its illustrations useful in small group teaching of undergraduate students. It is aimed at diagnostic histopathologists, nephrologists, and trainee histopathologists. My main criticism is that too many of the pictures are good if you know what you are looking at but are inadequately explained if you do not. This is especially true of the electron micrographs which would benefit from arrows or other indicators on the pictures themselves.

DR DAVIES

Special Topics in Endocrinology and Metabolism. Vol 1. MP Cohen and JH Foa. (Pp 144; no price given.) Alan R Liss Inc. 1981.

Like wine, some books are to be consumed from cover to cover, while others are for the connoisseur alone to savour and digest over a period of time. This book falls into the latter category representing as it does

the efforts of experts writing on specialist topics and bringing together into a single chapter facets of information that are only briefly mentioned in the more formal textbooks.

Six topics are covered in this first volume, of what it is proposed will be a continuing series. These vary from hypothalamic endocrine disease, and cyclic nucleotides in clinical endocrinology to the mechanisms and management of postural hypotension. The chapters are well written, and by their format emphasise the relevance and application of recent scientific developments to diagnosis and therapy. This and further volumes should provide readily available reference material for workers in particular fields of research although because of their format they will be of limited interest to many workers in the endocrinological field.

GW PENNINGTON

Haemostasis and Thrombosis. Eds AL Bloom and DP Thomas. (Pp 868; illustrated; £35.) Churchill Livingstone. 1981.

All 64 contributors of this new and comprehensive text are internationally acknowledged experts in some aspect of the haemostasis and thrombosis field. Despite the multiple and elitist authorship this compilation is not over-repetitive or encyclopaedic. Most of the contributors have struck a sensible balance between the background information on biochemical structure, function, and pathophysiology on the one hand and their clinical and diagnostic relevance on the other. An obviously strong editorial influence has succeeded in integrating these authoritative contributions into a well balanced, up-to-date, (some chapters include 1981 references) and eminently readable text which nevertheless will also be found to be an extremely valuable source of reference.

This book is not only imperative reading for candidates studying for postgraduate degrees, particularly the final MRC Path examination in haematology, but also for their teachers and examiners. It has the ingredients to become one of the best thumbed volumes on the bookshelf of every practicing haematologist. The production is pleasing and it is considered excellent value at £35.

RJL DAVIDSON

Microenvironments in Haemopoietic and Lymphoid Differentiation. Ciba Foundation Symposium 84 in honour of Professor

John Humphrey, FRS. (Pp 348; illustrated £22.50.) Pitman Books Limited. 1981.

The control of differentiation is one of those vast biological topics, hitherto largely in the domain of the embryologist, where modern research techniques have brought us to the brink of a general understanding. Surprisingly perhaps it is in the complex systems of haemopoiesis and lymphocytic differentiation that recent advances have been made. Cell culture, the identification of surface markers (with or without monoclonal antibodies), and the discovery of growth and inhibitory factors combine to make this a subject of absorbing interest not only to the haematologist and immunologist but to many others.

To read the summaries and the discussions (one-third of the book) gives a clear insight into what is and what is not known. Those who wish to know more about, say the evidence for de-differentiation, the nature of T cell regulatory factors, or the function of Langerhans cells, veiled cells, and interdigitating cells will probe more deeply. They will be richly rewarded.

HEM KAY

Paediatric Pathology. Ed CL Berry. (Pp 697; illustrated; DM 170.00; £39.) Springer-Verlag. 1981.

"Paediatric Pathology" by Professor Berry and eleven others, mostly from the London Medical Schools, is welcome as a new British contribution to texts on paediatric pathology. It includes a short chapter on examination of the fetus with 20 pages of illustrations of the external appearance of the brain and of normal histology of various organs at different stages of development followed by a section on placental and abortion pathology. Apart from a useful general review of congenital malformations and contributions on embryonic tumours, sudden infant death syndrome, and non-accidental injury, the remaining chapters are devoted to system pathology. Only skin and ophthalmic pathology are omitted.

The book is aimed at individuals with a special interest rather than a special training in paediatric pathology and there is, as the preface indicates, a conscious weighting of the emphasis in different systems. The practical detail in the sections on muscle and on inborn errors of metabolism is most helpful. On occasion the balance might be questioned; for

example two pages devoted to primary malignant tumours of the lung as against half a page to the common autosomal trisomic conditions. Some paediatric entities, such as shunt nephritis, are mentioned rather than described and others, such as pseudorheumatoid nodule, are omitted. However these are minor criticisms. The layout of the text is pleasing and the illustrations are generally of a high quality. Although it is not intended to be a reference book this is a comprehensive text which will be welcomed by all whose work touches on the paediatric age group and it deserves a place in the departmental library alongside "Kissane" and "Dehner".

AAM GIBSON

Advances in Clinical Cytology. LG Ross and DV Coleman. (Pp 335; illustrated; £25.) The Butterworth Group. 1981.

The past 25 years have seen dramatic advances in cell biology. Clinical cytology, on the other hand, has remained rather static for much of this period. Ten years ago it would have been difficult to write a book called "Advances in Clinical Cytology" because there were so few. The scene has been changing however and all pathologists would do well to peruse this excellent book.

Apart from Weinstein and Pauli with their splendid chapter on cell junctions all the authors are concerned with clinical problems. The well-reproduced pictures include many transmission and scanning electron micrographs. Miller objectively discusses the value, and price, of cervical screening. Bartels *et al* describe the present state of automated cell analysis, but to pass normal cervical smears as "negative" still requires the fantastically versatile human eye and brain.

This book will be a landmark in integrating clinical cytology with the mainstream of biology applied to medicine.

AL SPRIGGS

Recent Advances in Prenatal Diagnosis. Eds C Orlandi, P Polani and L Bovicelli. (Pp 326; illustrated; £19.75.) John Wiley & Sons. 1981.

This text is the promptly produced proceedings of a symposium arranged to review prenatal diagnosis in the Italian context and particularly its provision in that country. Thus it is not surprising that almost half of the contributors are from Italy. External experts reviewed various