Correspondence

Pulmonary adenocarcinoma metastatic to pituitary craniopharyngioma

Metastatic localisation of extracanial tumours inside a primary central nervous system (CNS) neoplasm is a rare, but well documented event usually involving meningiomas.[1 2] Although metastases to the sellar region are usually found in patients with advanced neoplastic disease, tumour to tumour phenomena in this site are rare and usually involve pituitary adenomas.[3 4]

This report describes a case of pulmonary adenocarcinoma metastatic inside a pituitary craniopharyngioma and the associated pathological and neuroradiological findings. It also suggests an aetiopathogenetic hypothesis for this event.

A 53 year old man underwent right pulmonary bilobectomy because of a non-small cell carcinoma. Pathological examination showed a pT2 N0 pulmonary adenocarcinoma with vascular invasion. Clinical and instrumental findings were negative for metastatic disease.

Eight months later, the patient presented a visual field defect, diabetes insipidus, and headache. Cerebral computerised tomography (CT) and magnetic resonance imaging (MRI) showed an intrasuprasellar, partially cystic lesion measuring 4 cm in the craniocaudal axis (fig 1). The lesion appeared to be well demarcated, with a partially calcified wall, and presented calcifications and areas of hyperintesity that were taken for haemorrhagic areas. The neoplasm showed an intrasellar and suprasellar component, with chiasmal stretching. Preoperative neuroradiological diagnosis was craniopharyngioma.

The patient underwent tumorectomy through the right pterional approach. Grossly, the lesion was partially cystic and contained a thick oil-like fluid. Histology showed a moderately differentiated adenocarcinoma with necrotic areas (fig 2) that were histologically similar to the previously removed pulmonary carcinoma. The carcinomatous proliferation was intermingled with a cystic structure. The latter was covered by benign appearing squamous epithelium with masses of keratin with ghost cells, extensive accumulation of cholesterol clefts, and calcifications suggestive of pituitary craniopharyngioma (fig 3A and B).

Immunohistochemical study using antibodies to low and high molecular weight cytokeratin confirmed the epithelial nature of the squamous and glandular component. Although the squamoid component contained low and high molecular weight cytokeratins, the glandular component preferentially expressed low molecular weight cytokeratins .

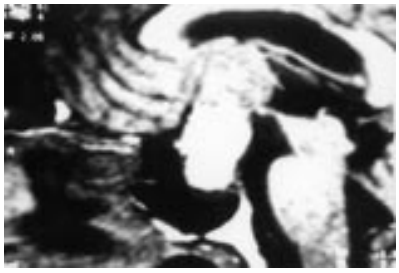

Figure 1 T1 weighted magnetic resonance image revealing an intrasuprasellar, partially cystic neoplasm with areas of hyperintensity in the sellar portion.

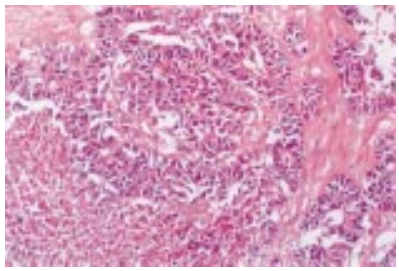

Figure 2 Haematoxylin and eosin sections showing adenocarcinoma with necrotic areas.

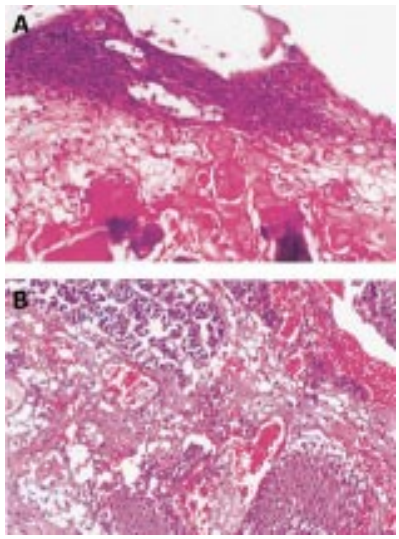

Figure 3 Cystic structure covered by a benign appearing squamous epithelium with masses of keratin with ghost cells and calcification, suggestive of craniopharyngioma (A). Islands of benign appearing squamous cells intermingled with the carcinomatous proliferation (B).

The histological findings and neuroradiological features supported the diagnosis of an adenocarcinoma metastatic inside a pituitary craniopharyngioma. Clinical history and histological similarities suggested that the lung was the primary site of the carcinomatous component.

Metastases to the sellar region are common in patients with advanced neoplastic disease, and the lung is one of the most common primary sites.[3 5] Lesions can be asymptomatic or associated with clinical manifestations.[6] In some cases, the metastatic pituitary tumour can be the initial presentation of an unknown primary malignancy.[7]

Metastatic localisation of extracerebral carcinoma inside a primary CNS neoplasm is a rare, but well documented event. Meningiomas are the most frequent reported host CNS neoplasm,[1 2] whereas metastases to a pituitary tumour are extremely rare and usually involve pituitary adenomas.[3 4 8] To our knowledge, the present case is the first example of pulmonary adenocarcinoma metastatic to a pituitary craniopharyngioma.

In our case, preoperative neuroradiological findings, namely cranial CT and MRI, led to the diagnosis of craniopharyngioma. The metastatic lesion was evident on haematoxylin and eosin sections, which showed atypical glandular structures intermingled with a cystic structure covered by benign appearing squamous epithelium. The coexistence of a Rathke cyst was ruled out because of the lack of ciliated columnar epithelium. Keratinous masses with ghost squamous cells, calcification, and the accumulation of cholesterol clefts led us to exclude the diagnosis of epidermoid cyst,[3] and squamous differentiation within a metastatic pulmonary carcinoma suggested the diagnosis of pituitary craniopharyngioma. The definitive histological diagnosis was adenocarcinoma metastatic inside a craniopharyngioma. The clinical history and histological similarities suggested that the lung was the primary site of the carcinomatous component.

This case underlines once again that unusual neuroradiological findings should be assessed scrupulously. It has been suggested that the possibility of a tumour to tumour phenomenon should be taken into account when faced with unusual CT and MRI findings, especially when there is a clinical history of a carcinoma.[2 9 10] Our case presented unusual radiological features in craniopharyngioma, namely areas of hyperintesity that we regarded as bleeding.

It is still unclear why a neoplasm can be the host for a secondary neoplasm. Although primary, multiple benign or malignant tumours in the same patient are present in 2–8% of all patients with cancer, tumour to tumour metastasis is extremely rare.[10] Some authors suggested that this phenomenon is not merely casual and different hypotheses have been proposed. Intense vascularisation of the host tumour might provide an increased chance of circulating cancer cells being caught by the host tumour. Thus, the vascular network might act as a filter to metastatic emboli from the bloodstream.[2] Studies on the expression of hormone receptors or oncogenes have suggested a biological affinity between metastatic and host tumour.[1]

However, our present case presented no apparent biological affinity between pulmonary adenocarcinoma and craniopharyngioma; moreover, craniopharyngioma is not a richly vascularised neoplasm and therefore a vascular influence on the genesis of the tumour to tumour metastasis cannot be postulated. Thus, we cannot rule out the possibility that the metastatic spread to the intracranial tumour was merely coincidental.

In conclusion, we underline that: (1) tumour to tumour phenomena do occur, albeit rarely. (2) Craniopharyngioma should be included in the list of CNS tumours able to host a second neoplasm. (3) Unusual neuroradiological, pathological, or laboratory findings always warrant close attention to achieve the correct diagnosis and therefore the best therapeutic approach. (4) Biological affinity between neoplasms may be a predisposing factor of this occurrence. However, the pathogenesis is still unclear and the possibility of an unusual combination of events cannot be ruled out.

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Book reviews

Tumors of the Peripheral Nervous System. BW Scheithauer, JM Woodruff, RA Erlandson. ($95.00.) AFIP, 1999. ISBN 188 10414 5

This book is part of the third series of the AFIP "Atlas of Tumor Pathology" series. The three American authors are recognised as experts in this field, and this book gains immensely from their experience and authority. This is no mere revised update from its predecessor, but is an entirely fresh approach to this complex field of pathology. The fascicle is not confined simply to peripheral nerve sheath neoplasms, but also describes the non-malignant conditions—hamartomas, hyperplasias, reactive lesions, and inflammatory lesions—that may present clinically as a peripheral nerve tumour.

This well laid out book begins with a useful description of the development and anatomy of the normal peripheral nerve. It then moves on to describe non-neoplastic nerve lesions, followed by chapters that describe the entire spectrum of benign and malignant nerve sheath tumours. The book is beautifully illustrated in colour, not only with depictions of histology, but macroscopic specimens, clinical specimens, clinical photographs, and the results of radiological and other investigations. These are particularly striking in the chapter on neurofibromatosis, which is one of the best accounts I have read of these conditions. Electron microscopy is not ignored, and immunocytochemical investigations and their role in diagnosis are well depicted.

My colleagues and I have found this an invaluable book and I would recommend it wholeheartedly to anyone whose diagnostic practice involves the examination of peripheral nerve lesions. Like other books in this series, it is well produced and bound, and represents excellent value for its modest price. It is only very seldom that new books can be recommended without reservation, but this is the exception that proves the rule and it should not be missed.

J W IRONSIDE

Colour Atlas of Bone, Joint, and Soft Tissue Pathology. N A Athanasou. (£140.00.) Oxford University Press, 1999. ISBN 0 192 62792 9.

This book provides the reader with what the title promises. Taking numerous and almost all high quality pictures as starting points, different areas in orthopaedic pathology are covered with small bits of text providing the most relevant clinical and histological details. It starts off with an overview of normal structure and development, then turns to repair, necrosis, and reactive changes in skeletal tissue, and continues with infections of bone and joint. I found these chapters quite useful with extremely good illustrations. For the next chapter on disorders of skeletal development, obviously some choices have been made as to which diseases are presented, but the ones discussed are the most frequent ones, and the histological pictures are accompanied by relevant *x* rays. The following chapters on metabolic and endocrine disorders of the skeleton, and diseases of joints and periarticular tissues, are again useful with good illustrations. The last two chapters I found less impressive. The final chapter on soft tissue tumours and tumour-like lesions could have been left out. This area is so wide that it is difficult to provide an overview of relevant lesions in 65 pages and it is therefore incomplete. GIST/GANT, myxofibrosarcoma, and solitary fibrous tumour are not described, and immunohistochemistry data are scarce (for example, CD34 expression in DFSP is not mentioned), as are relevant molecular biological data. Instead, this space would have been more useful to provide a more complete overview of bone tumours and tumour-like lesions, the penultimate chapter. Neoplastic conditions are dealt with in spite of the announcement on the back cover, which says the books only deals with non-neoplastic conditions. I suppose this is an error by the publisher, who seems to have made an abstract from the introduction by the author. Hopefully for the author, this incorrect announcement is not going to be used in advertisements and leaflets.

Recently, several good books on orthopaedic pathology have been published. Despite the few criticisms, this colour atlas will surely find its place in the market. It is a beautiful book with many superb pictures, quite suitable for general histopathologists and residents who want to get a quick overview of the large and not so easy field of orthopaedic pathology. Specialised orthopaedic pathologists will probably more often turn to the bigger recent books dealing with tumours.

P J VAN DIEST

The Photographic Atlas of Practical Anatomy. W Thiel. (£191.50.) Springer-Verlag, 1999. ISBN 3 540 62239 X.

The Photographic Atlas of Practical Anatomy by Thiel is a very accomplished and comprehensive work. A series of expertly prepared specimens that systematically explore the various regions of the body provides the reader with an excellent insight into the anatomy and, to some extent, also the physiology/function of the human body.

The most striking feature of the photographic plates is how exquisitely prepared the specimens are. The fixation and preparation techniques chosen guarantee a very superior degree of faithfulness in the reproductions. The expert reader will be particularly fascinated by how well even extremely small vascular structures have been reproduced by means of injection technique and how detailed the smallest ramifications of nerves have been prepared. The legends that complement each plate are easy to understand and clearly structured. They also stay within the limits of what is shown in the figure. It is a pity, however, that the anatomical structures shown are not identified in detail in the same volume, but in a separate one. The fact that the printing quality of the black and white reproductions is inferior to that of the colour plates does not help to orientate the reader. Moreover, the frame-like arrangement of the numbers and symbols is in some places confusing. As a result, both volumes have to be referred to simultaneously, which requires a lot of space and may therefore be very troublesome, especially for learners of anatomy.

All in all, this photographic atlas is a remarkable achievement capable of serving as a book of reference both for students and doctors of nearly all specialities who dedicate themselves to surgery. In view of this, it is certainly worth the price.

H BUERGER

Atlas of Metabolic Diseases. WL Nyhan, PT Ozand. (£140.00.) Chapman and Hall, 1999. ISBN 0 412 47960 5

It was a great pleasure reviewing this text and one of the best reads of a medical book that I have had for ages. It is written by two world experts in the field of inborn metabolic disorders. To a non-specialist, inborn metabolic disorders can seem daunting to understand, yet this book clearly describes in detail 103 such conditions in a very readable manner. The authors have also tried to keep the book as up to date as possible in a rapidly moving field.

The book is beautifully illustrated with a rich selection of colour photographs to highlight each metabolic disorder. The abnormal biochemical pathways are clearly portrayed by diagrams and each chapter is briefly summarised to facilitate reading and is well referenced. Although not as detailed as a textbook such as *The Metabolic Basis of Inherited Disease* it is what it states—an atlas of metabolic diseases—and its attraction to me was its clear, concise, and attractive style.

I would have no hesitation in recommending this book, and I suspect that it will be useful reading not only for paediatricians (both in training or more senior), but also chemical pathologists, laboratory scientists, and geneticists. Medical students may also find the atlas useful because of its user friendly format.

In summary, an excellent text and one that should find a place in many medical school libraries.

M CROOK