Microscopic thymoma and myasthenia gravis

F Puglisi, N Finato, L Mariuzzi, C Marchini, G Floretti, C A Beltrami

Abstract
A rare case of microscopically sized thymoma is described in a 56 year old man suffering from myasthenia gravis. Histological examination of the surgically removed thymus showed the presence of several epithelial thymoma-like islands. As controls, 100 thymuses obtained from consecutive necropsies were sampled: 4% of these cases showed epithelial islands. This case is further proof that "microscopic thymoma" is a true pathological entity and suggests that every thymus removed from myasthenic patients in which there is no macroscopic evidence of thymoma should be examined microscopically on serial sections.

Keywords: Microscopic thymoma, myasthenia gravis.

The first pathological report on microscopic thymoma, by Rosai and Levine, was published in 1976. The authors described a microscopic lesion (1 mm in diameter) having the histological features of a thymoma which was occasionally discovered in thymuses removed during cardiac surgery. Recently, Pescarmona et al. reported three cases of microscopic thymoma in thymuses removed from patients suffering from myasthenia gravis, an autoimmune disease which often occurs in the presence of thymic abnormalities. Here we present a case of a patient suffering from myasthenia gravis whose thymus contained several foci of microscopic thymoma.

Case report
A 56 year old man with diabetes mellitus was admitted to a general hospital in September 1993 with a four year history of generalised weakness and mild fatigability of the skeletal muscles. No diagnosis was made. In December the patient was referred to the neurological department of the University of Udine because the symptoms were rapidly worsening. On examination, he had bilateral ptosis, diplopia, and easy fatigability, mostly of the muscles of the trunk and the lower limbs. A diagnosis of myasthenia gravis was made on the basis of the clinical findings, an anticholinesterase test, repetitive nerve stimulation (40% reduction in the amplitude of the evoked muscle action potential), and positive assay for acetylcholine receptor antibodies (0-10 pmol/ml). In view of the possibility of an associated thymic disorder, a computed tomographic scan was performed. No mediastinal enlargement was discovered. In February 1994 the patient had a surgical thymectomy by the sternum splitting approach. After thymectomy, there was progressive clinical improvement over a follow up period of seven months. Anticholinesterase agents were used as medical treatment before and after surgery.

Pathological findings
The thymus weighed 30 g. Macroscopically it was a lobulated soft yellow gland. As controls we examined 100 thymuses obtained from consecutive necropsies to verify the presence of "thymoma-like" epithelial solid nests. The donors were 41 females, age range <1 to 90 years (mean = 68), and 59 males, age range <1 to 95 years (mean = 65). Thirty five samples of the myasthenic patient’s thymus and 3–10 samples from each of the control thymuses were processed for conventional histology. Tissue sections were stained with haematoxylin and eosin, PAS, and Gomori for reticulum; in order to identify epithelial islands, the sections were also stained for cytokeratin with monoclonal antibody (CAM 5.2, Becton Dickinson), using the avidin-biotin peroxidase technique. The thymus of the patient with myasthenia gravis showed a variable degree of involution. Several epithelial nests of round-oval cells, with nuclear dispersed chromatin and nucleoli, were histologically detected. Mitoses and nuclear atypia were not found (figure). The observed epithelial lesions were consistent with foci of microscopic thymoma. To determine their dimensions, we measured all the immunohistochemically identified epithelial areas by an image analyser (IBAS2000, Kontron). The morphometric data showed that the largest island has an equivalent area of 272 \times 71 mm.
The 100 control thymuses showed several patterns of involution with a decrease in number of lymphocytes and relative preservation of the epithelial cells. In four of the 100 cases (age range 53–80 years), epithelial islands and rosette-like formations were seen. In other cases, the architectural arrangement was characterised by anastomosing strands of epithelial elements admixed with thymocytes.

The mean diameter of the epithelial nests was 107 mm (range 41–237 mm).

Discussion
Approximately 75% of patients with myasthenia gravis have thymic abnormalities, namely lymphoid follicular hyperplasia or thymoma or both.14 Surgical thymectomy results in disease improvement in most myasthenic patients and in non-thymoma cases it is often curative,2 although the overall prognosis has not been significantly modified in large series of patients who have had thymectomy.34 The surgical approach is useful, however, in preventing spread of the thymoma. In this case we could not demonstrate the presence of a thymoma by computed tomography; nevertheless a thymectomy was performed for therapeutic purposes.

On histological examination, the islands of epithelial cells were interpreted as multiple foci of microscopic thymoma. This "microscopic thymoma" had a morphological pattern compatible with the descriptions of Rosai and Levine.1 Moreover, Pescarmona et al reported three other cases showing microscopic epithelial lesions (0.2–0.4 mm in diameter) consistent with foci of thymoma on the basis of their morphological appearance.

Since it is also possible to find epithelial clusters in involuted thymuses,5 we analysed as controls 100 consecutive thymuses with different degrees of involution obtained at necropsy. In four of these 100 cases, epithelial islands and very small rosette-like formations were observed. These microscopic changes were similar to those present in microscopic thymoma, especially the rosette-like formations. The findings of Rosai and Levine were similar, as were those of Pescarmona et al,5 and from a morphological point of view it is quite impossible to distinguish between the two conditions. Pescarmona suggested a possible multifocal origin of thymoma. Our case supports this suggestion and underlines the association between myasthenia gravis and multifocal thymoma not associated with lymphoid follicular hyperplasia of the thymus.

In conclusion, in order to establish the unequivocal presence of a thymoma in patients suffering from myasthenia gravis it is necessary to obtain histological samples of the entire gland, particularly in those cases without macroscopically evident lesions. Finally, it is important to realise that computed tomography of the chest is unable to detect microscopic sized thymomas.

Microscopic thymoma and myasthenia gravis.

F Puglisi, N Finato, L Mariuzzi, C Marchini, G Floretti and C A Beltrami

doi: 10.1136/jcp.48.7.682

Updated information and services can be found at:
http://jcp.bmj.com/content/48/7/682

These include:
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

An erratum has been published regarding this article. Please see next page or:
/content/48/9/884.3.full.pdf

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/
CD34 immunoperoxidase staining for the diagnosis of myelodysplastic syndromes and chronic myeloid leukaemia

Horany et al recently reported that immunoperoxidase staining of bone marrow biopsy specimens with the CD34/QBEND10 monoclonal antibody can be used to separate the myelodysplastic syndromes RAEB and RAEB-T from the RA and RARS subtypes. This report has now confirmed our previous findings that CD34/QBEND10 is a useful reagent for the study of conventionally processed, paraffin wax embedded bone marrow biopsy specimens. We have recently studied bone marrow biopsy specimens from 28 cases of primary myelodysplastic syndromes addressing the diagnostic value of CD34 staining in these conditions. We found that CD34 immunostaining can help in the detection of the increased number of blasts associated with the RAEB and RAEB-T subtypes. In addition, our study showed that QBEND10 represents a powerful prognostic tool for predicting survival and outcome in myelodysplastic syndromes. In primary RAEB cases median survival was 41 months in those with less than 1% CD34+ cells, and 29 months in those with more than 1% CD34+ cells (p<0.05). Similar results were obtained in cases of therapy related myelodysplasia: CD34+ cases had a mean survival of 10 months compared with 43 months for the CD34− cases (p<0.005). The authors also suggest the potential usefulness of CD34 staining for identifying patients in the accelerated phase of chronic myeloid leukaemia. Our recently published study of 59 bone marrow biopsy specimens representing the three phases (stable, accelerated and blastic) of chronic myeloid leukaemia has indeed confirmed the finding of a statistically higher CD34 value in the two aggressive phases of this disease compared with the stable phase.

Taken together, these data and those from Horany et al show that QBEND10 is a very useful reagent for the study of routinely processed bone marrow biopsy specimens and may provide useful diagnostic and prognostic information in myelodysplastic syndromes and myeloproliferative disorders. This type of approach may be especially valuable when a paraffin wax embedded specimen is the only material available for immunohistochemistry.

A ORAZI
Associate Professor of Pathology, Director, Section of Immunohistochemistry, Department of Pathology and Laboratory Medicine, University Hospital 4340, Indiana University Medical Center, 550 North University Blvd, Indianapolis, Indiana 46202-5228, USA


This textbook deals in depth with what is a very highly specialised subject, bronchial pathology. The editor is an established expert in pulmonary disease and has asked many experts, particularly clinicians, to contribute to the book. The book provides up to the minute information on what is known about bronchial disease. It concentrates on diagnostic, occupational disease, obliterative bronchiolitis, and bronchiolitis organising pneumonia (BOOP), the last two conditions which in the past have been lumped together but which this book clearly separates and clarifies as being different entities with vastly different prognoses. There are excellent chapters on history, anatomy, imaging, pathology, and the various causes of bronchial disease. The clinicians’ viewpoint is emphasised. However, the penalty of being a multi-author book is that there is dis-continuity and a lot of repetition. The editor should have exercised more control over this aspect of the book which makes it very annoying and boring at times when the same references and observations are made by several authors. While not of general interest I would recommend it to pathologists interested in pulmonary pathology as it deals in great depth with what has been pathologically and clinically a very confusing and poorly illustrated area of lung disease in the past.

M N SHEPPARD

Texas Society of Pathologists
75 Years Young
presents
Pathology: Past, Present and Future
Diamond Jubilee Celebration
February 1–4 1996

For further information, please contact: Paula Rigling, Texas Society of Pathologists, 401 West 15th Street, Austin, Texas 78701-1680, USA.

Lung pathology course
October 31 to November 3 1995
National Heart and Lung Institute
For further information, please contact: Professor B Corrin, Histopathology, Royal Brompton Hospital, London SW3 6NP (fax: 0171 351 8435).

First Announcement
5th International Congress on Trace Elements in Medicine and Biology presents
Therapeutic Uses of Trace Elements
February 4–7 1996

Main topics include: Therapeutic forms of trace elements; large epidemiological and intervention studies related to trace elements; trace element supplementation of population groups of differing ages; and trace elements, bone pathology and bone diseases, among others.

For further information, please contact: Madame A Alcaraz, Laboratoire de Biochimie C, CHURG, B.P. 217, F-38043 Grenoble Cedex 9, France (tel: (33) 76 76 54 84; fax: (33) 76 76 56 64).

Postgraduate course
Current concepts in surgical pathology
November 6–10 1995

The Department of Pathology, Massachusetts General Hospital, Harvard Medical School, will present a postgraduate course in Surgical Pathology under the direction of Drs Nancy L Harris, Robert H Young and Eugene J Mark.

This course is designed for pathologists at resident and practitioner levels. It will provide an in-depth review of diagnostic surgical pathology with emphasis on morphologic features, newly recognised entities, and the role of the pathologist in patient care. The course emphasises the role of the pathology department and is designed to enhance diagnostic accuracy. Despite the rapid advances in the field, the basic principles of diagnostic surgical pathology remain the key to proper patient care.

For further information please contact: Department of Continuing Education, Harvard Medical School, 25 Shattuck Street, Boston, MA 02115, USA (tel: (617) 432-1525).

Correction
Microscopic thymoma and myasthenia gravis (J Clin Pathol 1995;48:682–683). The authors apologise for the errors which appeared in the Pathological findings section of their report. In the last line of the first paragraph, 272 × 71 mm should read 272.7 × 71 μm. In the final paragraph, 107.7 μm (range 41–237 μm) should read 107 μm (range 41–237 μm).