Figure 1 JAK2 V617F mutation in matched buccal swab (s) and bone marrow (m) samples from patients with (lanes 1–5) and without the mutation (lanes 6–8). The mutation is represented by a 203 bp band. The 364 bp band serves as an internal JAK2-specific control. PV, polycythemia vera; CIMF, chronic idiopathic myelofibrosis; TE, essential thrombocythemia.

hypothesis, explaining why a genetic event apparently specific for the somatic haematopoietic tissue, is detected in buccal swabs may be proposed based on recently described trans-differentiation of haematopoietic cells into epithelial cells in allogeneic bone marrow transplant recipients.^{4,5}

The exact origin of the mutant DNA notwithstanding, buccal swabs appear to be a surprisingly good source of material for JAK2 mutation studies, provided that a sensitive mutation detection system is used. Their collection is much less invasive and cheaper, even when compared to collection of peripheral blood. On the other hand, caution has to be exercised when DNA derived from buccal swabs is planned to be used as a source of supposedly “wild-type” genetic material for comparison with DNA derived from blood or marrow, in the studies of mutations expected to be specific for haematopoietic tissues.

Anastazja Stój, Zbigniew Rudzki,
Jerzy Stachura

Department of Pathomorphology, Collegium Medicum,
Jagiellonian University, Kraków, Poland

Tomasz Sacha, Sylwia Czekalska

Department of Haematology, Collegium Medicum,
Jagiellonian University, Kraków, Poland

Correspondence to: Dr Zbigniew Rudzki, Consultant
Histopathologist, Department of Histopathology,
Birmingham Heartlands Hospital, Bordesley Green East,
Bordesley B9 5SS, Birmingham, UK; zbigniew.rudzki@
heartofengland.nhs.uk

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Mouse mammary tumour-like virus gene sequences and specific breast cancer morphology

We previously reported that the histological characteristics of some human breast tumours in which mouse mammary tumour-like virus (MMTV) gene sequences had been identified, were similar to mammary tumours from C3H experimental mice.¹ Such mammary tumours in mice are usually associated with MMTV.

We have now confirmed that the mouse mammary tumours were MMTV positive (as we had assumed but not demonstrated). Standard PCR analyses were conducted on DNA extracted from 10 (unselected) of the 44 archival formalin fixed mouse mammary tumour specimens previously described. The PCR methods used were identical to those used for the human breast tumour specimens, again as previously described. The analyses were repeated three times. The products of the PCR for three samples were sequenced.

All 10 mouse mammary tumour specimens were positive for MMTV gene sequences. All three PCR product samples that were sequenced gave an exact match with AF228552, the complete exogenous mouse mammary tumor virus C3H proviral genome.

These data confirm that MMTV gene sequences are present in mouse mammary tumours that occur in experimental C3H mice as used in our investigations.

Wendy K Glenn, James S Lawson,
Noel J Whitaker

School of Biotechnology and Biomolecular Science,
University of New South Wales, Sydney, Australia

Correspondence to: Professor James S Lawson, School
of Biotechnology and Biomolecular Science, University
of New South Wales, Sydney, Australia;
james.lawson@unsw.edu.au

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Helicobacter pylori-associated peptic ulcer and florid follicular gastritis mimicking a malignancy

In chronic follicular gastritis the lymphoid follicles are usually localised in the lamina propria.¹ In lymphoid hyperplasia associated with a chronic peptic ulcer, numerous lymphoid follicles are sometimes present in the ulcer base, in which the muscularis propria has usually been destroyed and replaced by scar tissue.² The histology of *Helicobacter*-associated chronic gastritis with numerous reactive lymphoid follicles and an indistinct poorly developed marginal zone may closely simulate lymphoma and pose a diagnostic challenge. We present an extreme example of florid follicular gastritis, which mimicked a malignant neoplasm clinically and pathologically. To our knowledge, such florid hyperplasia with reactive lymphoid follicles extending into the muscularis propria and beyond has never been reported.

A 65-year-old man presented with intermittent abdominal hunger pain for one month. Endoscopic biopsies revealed a Bormann type II antral ulcer with *H. pylori* infection. Endoscopic findings and image study strongly suggested gastric cancer; a subtotal gastrectomy and regional lymph node dissection were performed. On the lesser curvature side of the antrum, there was a tumour-like lesion, 4×3×1 cm with ulceration and slightly elevated margins. The cut surface was whitish and firm with effacement of the gastric muscle wall (fig 1). Microscopically, sections of stomach show ulcerated antral mucosa with an adjacent and underlying intense chronic inflammatory infiltrate comprising reactive germinal centres surrounded by a narrow mantle zone with some peripheral lymphocytes. Beneath the ulcer there was intense scarring with destruction of the muscularis propria, which was preserved lateral to the ulcer margins. The hyperplastic lymphoid follicles extended into the scar tissue, muscularis propria and serosa (fig 2). Bacilli morphologically typical of *H. pylori* were identified. There were no lymphoepithelial lesions or aggregates of centrocyte-like atypical lymphocytes to suggest mucosa-associated lymphoid tissue (MALT) lymphoma. The dissected regional nodes measured up to 2.2 cm in diameter and revealed marked follicular hyperplasia.

Immunohistochemistry showed that the germinal centre cells were positive for CD10 and bcl-6 but not bcl-2 and they expressed polytypic light chains. The surrounding mantle zone lymphocytes expressed immunoglobulin

Figure 1 Cut surface of the antral ulcerative lesion is whitish and firm with effacement of the gastric wall.

Figure 2 Photomicrography shows ulceration in the left upper corner and extensive and transmurial lymphoid infiltration (A) with extension through the muscularis propria into the subserosa (C). A higher-power view shows a germinal centre within the muscularis propria (D). Immunohistochemistry shows that the germinal centre lymphocytes were bcl-2-negative while the mantle and interfollicular lymphocytes were positive (B).

M (IgM) and IgD without a significant population of IgM-positive IgD-negative marginal zone cells. CD3-positive T-cells were seen between the follicles. Clonality study using PCR with paraffin-embedded sections for the framework three region of the Ig heavy chain gene showed polyclonal results.³

Isaacson and Wright proposed the concept of MALT lymphoma in 1983 for a low-grade gastric B-cell lymphoma with a distinct indolent clinical course, which is frequently associated with *H. pylori* infection.⁴ The term

“pseudolymphoma” had been used previously to describe lymphoid lesions that show borderline features between hyperplasia and neoplasia or benign tumour-like enlargement of lymphoid tissue. In a large retrospective morphological and immunophenotypic review of 97 pseudolymphomas, Abbondanzo and Sobin found that the majority (77 cases) were malignant lymphoma, mainly MALT lymphoma, with the remaining 20 cases being reactive lymphoid hyperplasia associated with chronic follicular gastritis (15 cases) or atypical

lymphoid infiltrate (5 cases).¹ In the 15 cases of chronic follicular gastritis, the reactive germinal centres were localised in the lamina propria, while the remaining five cases (three partial gastrectomies and two endoscopic biopsies) revealed diffuse atypical lymphoid infiltrate that could not be further characterised.

Lymphoid infiltrate with reactive germinal centre formation may be present in follicular gastritis and MALT lymphoma, while dense aggregates of lymphoid follicles may mimic follicular lymphoma. Florid lymphoid hyperplasia in the current case is extremely unusual. Careful histopathological examination and immunohistochemical (and molecular) study revealed the reactive nature of this lesion.

Shih-Sung Chuang

Department of Pathology, Chi-Mei Medical Centre, Tainan, Taiwan; Department of Pathology, Taipei Medical University, Taipei

Chien-Feng Li

Department of Pathology, Chi-Mei Medical Centre, Tainan, Taiwan

Peter G Isaacson

Department of Histopathology, University College London, London, UK

Correspondence to: Dr Shih-Sung Chuang, Department of Pathology, Chi-Mei Medical Center, 901 Chung-Hwa Road, Yung-Kang City, Tainan County 710, Taiwan; cmh5301@mail.chimei.org.tw

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