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The culture of lactobacilli species in gastric carcinoma

Filamentous organisms have been reported in brushings and biopsies from both benign and malignant gastric ulcers,1 but these have not been characterised and their importance is unknown. In a preliminary study of tissue samples obtained at laparotomy from malignant gastric ulcers we cultured Lactobacillus spp, which are recognised commensals in the upper gastrointestinal tract, but not normally present in the stomach.

In view of the previous culture of Lactobacillus spp in surgically excised gastric tumours, we prospectively sought evidence of Lactobacillus spp infection of benign and malignant gastric ulcers in patients attending for gastroscopy. Gastric mucosal biopsies were obtained from normal mucosa, erosions, and from benign and malignant ulcers in patients undergoing routine gastroscopy in our unit. The endoscopic biopsies were immediately placed into 5 ml of semisolid De Man, Rogosa, Sharpe (MRS) culture medium for transport to the laboratory. Biopsies were then plated on to the following: (1) 5% blood agar and MRS agar incubated in CO2 at 37°C; and (2) neomycin agar and MRS agar incubated anaerobically at 37°C. After incubation for 48 hours, any probable Lactobacillus spp were subcultured to blood agar and Gram staining was performed. The cultures were re-checked at five days for slow growing strains. All Gram positive bacilli were stored at −70°C for later identification by catalase reaction and a profile using a gallery scheme (API 50 CHL) and fermentation of 49 carbohydrates.

In total, 39 patients were studied. Histology of the gastric biopsies revealed: adenocarcinoma (n = 9), gastric lymphoma (n = 2), benign gastric ulcer (n = 8), gastric erosions (n = 11), and normal mucosa (n = 9). All strains of Lactobacillus spp had grown at 48 hours.

Ten of 11 malignant and six of eight benign gastric ulcers grew Lactobacillus spp. In addition, Lactobacillus spp were cultured in four of 11 gastric erosions but all the normal specimens were negative for culture. Some specimens yielded more than one species. Some lactobacilli could not be speciated. Table 1 shows the numbers of specimens with each histological diagnosis that were culture positive for the individual species of lactobacillus. These data demonstrate that Lactobacillus spp colonise areas of both malignant and benign gastric ulceration but not normal mucosa. It is probable, but not confirmed, that these are the filamentous organisms previously described in similar samples. Although we cannot exclude a role for these bacteria in the aetiology of gastric ulceration, it seems most likely that they opportunistically colonise the necrotic tissue in areas of ulceration of whatever cause. Clarification of the mechanisms that underlie this phenomenon might provide a means to target gastric malignancy both for diagnosis and treatment. Additional work is needed to explore the relation between gastric ulceration and Lactobacillus spp.

References
1 Sharpe (MRS) culture medium for transport to the laboratory.

T W Beer
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Table 1 The culture of lactobacilli species

<table>
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GU, gastric ulcer.

Digital imaging of surgical specimens

Matthews and Denney recently described in this journal a method for digitally recording gross specimen images.1 We agree that flatbed scanners are excellent for this purpose and recently outlined our findings using a similar method.2 In fact, we have found that excellent images can be obtained without the need for a box to contain the specimen in fluid. The sample is simply placed on the device and scanned. Some imaging experts recommend the use of a black background rather than the white surface, which is standard on the scanner lid underside, although we have found little improvement using this modification.

It should also be noted that excellent results can be obtained from scanning histological sections mounted in 35 mm slide holders.3 However, this does require the acquisition of a 35 mm colour slide scanner, which is relatively expensive. The whole mount sections can also be used in a standard slide projector.

In laboratories already using computer technology, flatbed scanning provides a very convenient, cheap, and rapid form of recording gross images, with results obtained superior to conventional photocopying. Furthermore, annotations such as patient identification, orientation, and block site can be added to the image immediately and permanently stored.

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Recurrent cellular angiofibroma of the vulva

Cellular angiofibroma is a benign mesenchymal lesion that was first described in 1997,1 and which chiefly involves the vulval region. The original report described four cases of this distinctive lesion, all occurring in middle aged women, and the authors considered this to represent a benign neoplasm with little or no potential for local recurrence if excised with a rim of uninvolved normal tissue. Since then, an identical lesion has been described in a woman involving the subcutaneous tissue of the chest wall.2 Similar lesions have also been reported in the inguinoscrotal region of men.3 Here, we describe a vulval cellular angiofibroma that, although initially excised with a rim of normal tissue, exhibited tumour recurrence in a relatively short time period.

A 49 year old woman presented with a mass in the posterior aspect of the left labia majora.

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A 49 year old woman presented with a mass in the posterior aspect of the left labia majora.
A well circumscribed lesion measuring 4 cm in diameter was excised with a rim of normal tissue. Six months later she developed a recurrent swelling at the site of the previous excision. This lay in the angle between the posterior wall of the vagina and the anterior aspect of the external anal sphincter. A magnetic resonance imaging scan confirmed the presence of a recurrent lesion and the mass was excised. The mass was well circumscribed and was dissected free without complication. Ten months after excision of the recurrent lesion the patient is well with no further evidence of local recurrence.

The original surgical specimen consisted of a well circumscribed 4 cm firm white lesion, which was completely surrounded by a rim of normal tissue. The recurrent lesion consisted of a well circumscribed 6.5 cm diameter firm white lesion.

Histology of the original biopsy showed a well circumscribed but unencapsulated lesion, which was completely surrounded by a rim of compressed uninvolved tissue. The lesion was composed of short interlacing bundles and fascicles of spindle shaped cells with bland vesicular nuclei and abundant eosinophilic cytoplasm (fig 1A). There was no necrosis and few or no mitotic figures. A notable feature was the prominent vascularity of the lesion and many of the blood vessels were characterised by thick hyalinised walls (fig 1B). Small numbers of mature adipocytes were present within the lesion, especially around the periphery (fig 1C) and there were scattered stromal mast cells and occasional small collections of mature lymphocytes. Histology of the recurrent lesion showed similar features. Again the lesion was well circumscribed. There were focci of mildly increased cellularity and decreased vascularity compared with the original lesion and scattered mitotic figures were identified, the mitotic count being $< 1/10$ high power fields. An additional feature was the presence of many small lymphoid aggregates throughout the lesion. These were mostly composed of mature lymphocytes with occasional germinatal centres (fig 2).

Immunohistochemistry of both the original and recurrent lesion showed positivity of the spindle shaped cells for vimentin (Dako, Copenhagen, Denmark) but no staining for desmin (Dako), a smooth muscle actin (Sigma, Poole, Dorset, UK), S-100 protein (Diagnostic Products Limited, Abingdon, UK), CD34 (Sero-tec, Oxford, UK), or AE1/AE3 (Dako). There was weak staining for epithelial membrane antigen (EMA; Dako). There was diffuse strong nuclear positivity for the oestrogen receptor (ER, clone ID5; Dako; fig 3) and the progesterone receptor (PR, clone 1Ab; Dako).

Electron microscopy showed spindle shaped tumour cells embedded in a collagen rich matrix containing vascular channels. Most of the tumour cells had a fibroblastic appearance with prominent cisterni of rough endoplasmic reticulum. Some of the tumour cells contained small numbers of cytoplasmic actin filaments with focal deposits of external lamina and occasional subplasmalemmal densities, in keeping with myofibroblastic differentiation.

The lesion we describe, which exhibits identical histological features to the cases of cellular angiofibroma reported by Nucci et al., was characterised by local recurrence in a relatively short period of six months. This was in spite of the fact that the lesion was adequately excised originally with a rim of uninvolved tissue. This is the first report of recurrence of a cellular angiofibroma and illustrates the potential for local recurrence even with adequate excision. The recurrent lesion contained focci of increased cellularity but there were no histological features to suggest malignancy. We do not feel that the fact that the neoplasm recurred is indicative of malignancy.
It is not our purpose here to reiterate in detail the morphological differential diagnosis of cellular angiofibroma, which has been adequately dealt with previously. However, in the vulval region this differential diagnosis may include neoplasms that are relatively specific to this site, such as aggressive angiomyxoma and angiomyofibroblastoma. Other neoplasms that are not specific to the vulva, such as solitary fibrous tumour, spindle cell lipoma, superficial angiomyxoma, smooth muscle tumours and perineurioma, also enter into the differential diagnosis. The distinction into the differential diagnosis may include excluding a solitary fibrous tumour, which has been described in this region.

The present tumour was negative for CD34, excluding a solitary fibrous tumour, which has been described in this region. Although cellular angiofibroma was initially thought to be CD34 negative, two additional cases described in addendum to the original publication were found to be positive, with cellular angiofibroma thus joining the ever increasing list of mesenchymal lesions that may express the CD34 antigen.

The case we describe exhibited weak positive staining for EMA, which has not been described previously. EMA positivity raises the possibility of a perineuroma, a benign lesion of perineural cells. However, perineurioma characteristically exhibits a prominent storiform growth pattern and moreover ultrastructural examination in our patient revealed no evidence of perineural differentiation. Rather, electron microscopy showed fibroblastic and myofibroblastic features. The predominant fibroblastic differentiation is in keeping with a vimentin positive but desmin and α smooth muscle actin negative immunophenotype; positivity with the last two antibodies being more characteristic of myofibroblast than fibroblastic differentiation.

The present lesion exhibited diffusely strong positivity for ER and PR. A recent study investigating the hormone status of a variety of vulval vaginal mesenchymal lesions found most of these to be positive for ER and PR, and positivity may simply be a reflection of the expression of these receptors normally in subepithelial mesenchymal cells of the lower female genital tract. Nucci et al did not perform immunostaining for ER or PR on their cases, and interestingly, the cellular angiofibroma involving the chest wall exhibited no staining for ER or PR.

**CSF spectrophotometry in the diagnosis of subarachnoid haemorrhage**

We note with interest the recent “Best Practice” article on cerebrospinal fluid (CSF) spectrophotometry in the diagnosis of subarachnoid haemorrhage (SAH) by Dr Cruickshank which produced a set of proposed national guidelines for the practice of spectrophotometry, we wish to highlight several important differences between the two sets of recommendations.

Most importantly, Cruickshank concludes that, as long as a CSF sample containing up to 40 000 × 10^6 erythrocytes/litre is centrifuged within 15 minutes, no oxyhaemoglobin will be present in the supernatant after centrifugation, and that within this cell count and time constraint, the presence of oxyhaemoglobin in CSF is supportive of SAH. This is entirely consistent with her in vitro data, although the only practical way of achieving CSF delivery within this time period would appear to be by pneumatic tube, itself a cause of artefactual haemolysis. However, there are in vitro data that allow for a longer time before centrifugation. Thus, we know that various 10 000 × 10^6 erythrocytes/litre can be left for up to 30 minutes and 4000 × 10^6 erythrocytes/litre can be left for up to 24 hours without oxyhaemoglobin appearing in the supernatant.

It is when we come to in vivo work that the data are conflicting. Again, Dr Cruickshank’s conclusions are consistent with her data from patients undergoing spinal anaesthesia—that red blood cell counts from < 5 to 2215 × 10^6/litre in CSF samples centrifuged within 40 minutes of puncture resulted in no detectable oxyhaemoglobin—and also with data from Barrows et al. with data to date are nevertheless in variance with those of Fahie-Wilson and Park, who found that red blood cell counts from 64 to 705 × 10^6/litre in CSF samples centrifuged as soon as possible after receipt resulted in significant oxyhaemoglobin that was detectable in the supernatant. This set of experiments was performed because initial observations were that many CSF samples taken for spectrophotometry in cases of suspected SAH showed the presence of oxyhaemoglobin totally out of keeping with cell counts or time lapse before centrifugation.

A survey of spectrophotometry findings against outcome in computed tomography negative suspected SAH from four participating centres (R Beetham et al, unpublished data, 2001) undertaken by our group has indicated that out of scans on 740 patients, 204 showed detectable oxyhaemoglobin without increased bilirubin. Thirty of these 204 patients proceeded to angiography and only two aneurysms were found. It has to be concluded that angiography in all 204 patients on the basis of the finding of oxyhaemoglobin alone would have been unwarranted. The presence of oxyhaemoglobin in CSF is therefore a useful clue to the presence of SAH, but does not necessarily support the diagnosis of SAH.

On a second matter, we differ on the assertion that the occurrence of bilirubin alone without oxyhaemoglobin is a rare occurrence in computed tomography negative SAH. Dr Cruickshank states that “Increased serum bilirubin who showed aneurysms...” but a closer reading of the article reveals that while there were 11 patients with increased bilirubin who showed aneurysms on angiography, 30 of these were negative for oxyhaemoglobin and a third demonstrated only a trace of oxyhaemoglobin (absorbance above baseline of 0.012 AU). We agree however that an increased bilirubin without oxyhaemoglobin is found more frequently in association with an increased serum bilirubin than with SAH.

Finally, although we welcome the recommendation that non-haemorrhagic bilirubin is taken into account whenever bilirubin is detected, no mention is made of a reference range for bilirubin against which a value can be judged to be normal or abnormal.

Quantitation is only of use if such a reference range is provided. We recommend the correct bilirubin absorbance at 476 nm, as advocated by Chalmers, and provide a reference range based on angiographic outcome. It is also our experience that the correction for non-haemorrhagic bilirubin is taken into account whenever bilirubin is detected, no mention is made of a reference range for bilirubin against which a value can be judged to be normal or abnormal.

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Dermatopathology in Systemic Disease

Smoller BR, Horn TD. (£110.00.) Oxford University Press, 2001. ISBN 0 19 511033 3

First, and lasting impression: what a beautiful book this is! Drs Smoller and Horn are to be congratulated on a piece of very fine work indeed. *Dermatopathology in Systemic Disease* provides a detailed, well illustrated, clearly described, and well referenced review of a difficult and often highly complex field of diagnostic dermatopathology. The wealth of data is made accessible by well subdivided texts, attractive tables, and generally excellent micrographs. The use of a similar structure of texts, attractive tables, and generally excellent coverage of a wide and heterogeneous field of biological and clinicopathological work.

W J Mooi

Pathology of Skeletal Muscle, 2nd ed

Carpenter S, Karpati G. (£140.00.) Oxford University Press, 2001. ISBN 0 19 506364 3

The emphasis of the book, and its strength, is directed towards diagnostic histopathology: texts on pathogenesis are often very brief and (for example, lupus erythematosus; various connective tissue diseases) not always do justice to the large volume of data that have become available on these subjects. But in view of the emphasis on diagnostic rather than pathological aspects (to such an extent that a title of *Diagnostic Dermatopathology in Systemic Diseases* might have been appropriate) this need not concern us. In sum, the book is a welcome and very well produced addition to available textbooks on dermatopathology.

W J Mooi

Radiation Pathology

Forjarof LF, Berthrong M, Anderson RE. (£120.00.) Oxford University Press, 2001. ISBN 0 19 511023 4

This is an interesting and well presented book, aiming to provide a comprehensive coverage of the varied and ever expanding field of radiation pathology. The three authors are each recognized in their respective fields, and their joint efforts are complemented by an interesting chapter on therapeutic applications by Dr JL Meyer.

The book is, of course, heterogeneous, ranging from diagnosis to various basic aspects of radiation pathology and from radiation induced carcinogenesis to the tissue damaging effects of radiation. Nonetheless, the authors have succeeded in providing a reasonably homogeneous whole, where chapters complement each other. A useful glossary precedes the first chapters and illustrations are generally of excellent quality.

P E Rose