Immunohistochemical analysis of measles related antigen in IBD

Editor,—What is one to make of the immunohistochemical study of Iizuka et al (Gut 2000;46:163–169)? Before addressing the possible scientific implications of their findings, it is worth clarifying a few points with respect to our own research. Iizuka et al state that “the measles hypothesis is based on the theory that measles antibody recognises measles virus itself and the measles virus antigen is uniquely present in Crohn’s disease.” Is this the authors’ hypothesis? It is certainly not ours. That the measles antibody used in our studies (not that used by the authors in the present study) recognises the measles virus N-protein is a separate fact. We are appalled by the implication that we would consider a weakly positive signal to be negative thus potentially biasing the results. Signal strength in Iizuka’s studies was evidently on a continuum. In contrast, we found that it could be readily dichotomised into present (discrete and punctate; fig 1) or absent.

A crucial experiment that has been omitted from their study is application of their antibody to primate cell lines either infected or stimulated with something other than measles virus. The indication from the observations in gut tissues is that expression of the epitope recognised by their antibody is a function of inflammation. Is this elicited by specific or non-specific processes?

It is worth emphasising the differences between the study of Iizuka et al and our own. They used a different antibody on tissues processed in an entirely different way (periodate/lysine/4% paraformaldehyde fixed, cryostat sections versus 10% neutral buffered formalin fixed, paraffin sections). They identified markedly different localization patterns, both in the lineage of positive cells and the subcellular distribution (cytoplasmic versus nuclear). Most importantly, they excluded from analysis the specific foci that were identified as exclusively positive in our studies. Despite its limitations, this work may contribute to our understanding of why measles has been linked with inflammatory bowel disease (IBD). It is our hypothesis that atypical exposure to measles virus in early life increases the risk of subsequent IBD among genetically susceptible individuals. Parallels can be drawn from the rare neurological disease subacute sclerosing panencephalitis (SSPE), a delayed sequelae to persistent measles virus infection with a long natural history where the chronic disease manifests several years after the acute measles infection. In SSPE, several atypical characteristics of acute measles infection increase the risk of disease. This is likely to be because elements of the host immune response to the virus are established at the time of acute measles infection and atypical infection may alter the characteristics of this response, increasing the risk of inappropriate immune reactivity. Measles (or at least components of measles virus material) may persist at very low copy number concentrations, making it difficult to detect using conventional RT-PCR, even with hybrid capture. Indeed, it has been argued that such retention of viral material may be important in maintaining functional immu

Figure 1 Multinucleate giant cell in a Crohn’s disease granuloma. Rare cytoplasmic signal for measles virus N-protein using monoclonal antibody immunohistochemistry (Seralab, Crawley Down, Sussex, UK). An extremely discrete punctate signal is seen. Original magnification ×1000 (oil immersion).

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Reply

Editor,—We thank Dr Wakefield and colleagues for their interest in our work and we acknowledge that we had initially pursued the same hypothesis that they proposed. However, we have come to a different conclusion through a series of studies1–4 revealing that the antimeseal monoclonal antibody (Seralab, Crawley Down, Sussex, UK) that Wakefield et al used in their study1 is a different antibody on tissues processed in an entirely different way (periodate/lysine/4% paraformaldehyde fixed, cryostat sections versus 10% neutral buffered formalin fixed, paraffin sections). We identified markedly different localization patterns, both in the lineage of positive cells and the subcellular distribution (cytoplasmic versus nuclear). Most importantly, they excluded from analysis the specific foci that were identified as exclusively positive in our studies. Despite its limitations, this work may contribute to our understanding of why measles has been linked with inflammatory bowel disease (IBD). It is our hypothesis that atypical exposure to measles virus in early life increases the risk of subsequent IBD among genetically susceptible individuals. Parallels can be drawn from the rare neurological disease subacute sclerosing panencephalitis (SSPE), a delayed sequelae to persistent measles virus infection with a long natural history where the chronic disease manifests several years after the acute measles infection. In SSPE, several atypical characteristics of acute measles infection increase the risk of disease. This is likely to be because elements of the host immune response to the virus are established at the time of acute measles infection and atypical infection may alter the characteristics of this response, increasing the risk of inappropriate immune reactivity. Measles (or at least components of measles virus material) may persist at very low copy number concentrations, making it difficult to detect using conventional RT-PCR, even with hybrid capture. Indeed, it has been argued that such retention of viral material may be important in maintaining functional immu

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reaction, our reasons for concluding that what was stained with 4F12 (and the monoclonal antibody that we purchased from Seralab) was not the measles antigens but the host protein unrelated to the measles viruses were given in detail in our paper (Gut 2000;46:163–169) and we see no need to reiterate them here. One final word with regard to the comment of Wakefield et al on our description of molecular mimicry as a possible mechanism for pathogenesis, let us be clear that our report should not be interpreted as support for the hypothesis of measles virus or measles vaccination triggering Crohn’s disease.

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Survivin gene expression and prognosis in recurrent colorectal cancer

EDITOR—Sarela and colleagues (Gut 2000;46:15–50) report on the association of Survivin gene expression and prognosis in recurrent colorectal cancer. The methods described for detecting Survivin mRNA relied on reverse transcription-polymerase chain reaction (RT-PCR), an exquisitely sensitive technique that has not previously been validated for this gene. We wish to point out three areas of technical difficulty in the methodology.

(A) The fidelity of mRNA extraction and RT was tested using oligonucleotide primers for glyceraldehyde-3-phosphate dehydrogenase (GAPDH), a “housekeeping” gene. However, this may give rise to false positives by amplification of pseudogenes from contaminating genomic DNA.

(B) The process of RT using an oligo dT nucleotide as the RT primer results in the creation of cDNA templates for all mRNAs in the sample. This may be a problem if the gene for effector cell protease receptor 1 (EPR-1) is expressed. This gene codes for a cellular receptor of blood clotting factor Xa.

(C) The PCR primers as published are in the first and fourth exons. The amplified sequence would be expected to include the published splice variants caused by deletion of the third exon or insertion of the 2B exon, as described by Mahotka and colleagues.

This would result in multiple bands detected on agarose gel. We would be interested to know whether these points were taken into account.

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Survivin splice variants, which were described in renal cell and lung cancer cell lines, after our paper was accepted for publication, are certainly intriguing. On agarose gel electrophoresis we noted the expected Survivin amplification product of 338 bp (confirmed by direct sequencing) in the promis- sion band in all cases that were scored Survivin positive. In a small proportion of cases, additional minor bands, which may have resulted from alternative splicing, were noted. As discussed by Mahotka and colleagues, alternative splicing adds considerably to the complexity of systems controlling apoptosis. Further investigation of the significance of this phenomenon in colorectal cancer is underway.

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Reply

Entwistle: We thank Miller and colleagues for their interest in our study, and for pointing out the areas of technical difficulty with reverse transcription-polymerase chain reaction (RT-PCR) based projects.

(A) Glyceraldehyde-3-phosphate dehydrogenase (GAPDH) amplification is well established as a fidelity for the RT and has been used as such in numerous studies, including that of Mahotka and colleagues’ quote by Miller et al. In our cell culture experiments, the intron spanning GAPDH primers used in the present investigation yielded more consistent results than beta-actin primers. While GAPDH pseudogenes may occasionally be problematic, the modified primers used in the present investigation confirmed distinct and mutually exclusive transcripts for Survivin (1.9 kb) and EPR-1 (1.3 kb). Consequently, even if we were to accept Miller et al’s unsupported hypothesis regarding a recognition site for the Survivin forward primer in EPR-1, it is highly unlikely that an EPR-1 product of the same size and sequence as Survivin would be amplified. The specificity of our RT-PCR data is further confirmed by immunohistochemical analysis (using a monoclonal antibody kindly provided by the Yale group) that demonstrates a similar prevalence of Survivin protein expression, and a strong degree of correlation between protein and mRNA expression, in colorectal cancer.

(C) Survivin splice variants, which were described in renal cell and lung cancer cell lines, after our paper was accepted for publication, are certainly intriguing. On agarose gel electrophoresis we noted the expected Survivin amplification product of 338 bp (confirmed by direct sequencing) in the prominent band in all cases that were scored Survivin positive. In a small proportion of cases, additional minor bands, which may have resulted from alternative splicing, were noted. As discussed by Mahotka and colleagues, alternative splicing adds considerably to the complexity of systems controlling apoptosis. Further investigation of the significance of this phenomenon in colorectal cancer is underway.

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NOTES

Falk Workshop
The workshop on Hepatobiliary Transport: From Bench to Bedside, will be held in Aachen, Germany, on 25–26 January 2001. Further information: Falk Foundation e.V.—Congress Division, Leinenweberstr. 5, PO Box 6529, D-79041 Freiburg, Germany. Tel: +49 761 15 14 0; fax: +49 761 15 14 359; email: symposia@falkfoundation.de

8th International Symposium on Pancreatic and Biliary Endoscopy
This meeting will be held on 26–28 January 2001 at the Cedars-Sinai Medical Center in Los Angeles, California. Nineteen hours of category 1 CME credit. Further information: Ms Bari Laner, Office of Continuing Medical Education, Cedars-Sinai Medical Center, 8700 Beverly Boulevard, Atrium 119, Los Angeles, CA 90048, USA. Tel: +1 310 423 2937; fax: +1 310 423 0056; email: laner@csbs.org

American College of Gastroenterology
2001 International GI Training Grants Programme
The ACG International GI Training (IGT) Grant Programme provides funding for clinical or clinical research training in gastroenterology and hepatology so that an individual can acquire or develop new cognitive knowledge or a technical skill. This newly acquired knowledge or skill would then be used to improve patient care in the applicant’s geographic area. Physicians outside of the United States and Canada are eligible to apply. At least one fellowship with a maximum of $10 000 per IGT fellowship will be awarded during 2001, for a training period of not less than six months. Awards will be made by a special committee of the ACG and will be based upon the applicant’s credentials, the merit of the proposed training by the selected host training centre and the potential for enhancing the field of gastroenterology in the applicant’s home country. Application forms can be obtained from the ACG administrative office: 4900B South 31st Street, Arlington, Virginia 22206-1656. Tel: +1 703 820 7400; fax: +1 703 931 4520; website: www.acg.org. Deadline for submission of application is 1 April 2001.

Cleveland Clinic Florida’s Gastroenterology Update 2001
Cleveland Clinic Florida will be sponsoring a postgraduate course entitled “Gastroenterology Update 2001” to be held on 10–11 February 2001 in Fort Lauderdale, Florida, USA. Further information: Sally Jagelman, Manager of Continuing Medical Education, Cleveland Clinic Florida, 3000 West Cypress Creek Road, Fort Lauderdale, FL 33309, USA. Tel: +1 954 978 5539; fax: +1 954 978 5056; email: jagelman@ccf.org

GI malignancies can be prevented and treated: from the bench to the bedside
This international meeting will be held on 14–17 February 2001 in Jerusalem and the Dead Sea, Israel. Further information: Marilyne Katz, Secretariat, GI Malignancies, Target Tours, PO Box 29041, Tel Aviv 61290, Israel. Tel: +972 3 5175150; fax: +972 3 5175155; email: gi@targetconf.com

Redefining Priorities in Gastroenterology
This congress will be held on 11–14 April 2001 in Monte Carlo, Italy. It will be chaired by Professor Massimo Crepni (Rome, Italy) and Professor Emmon Quigley (Cork, Ireland). Further information: Maddalena Massaro, Project Leader, AIS-C-AIM Group, Via A Ristori 38, 00187 Rome, Italy. Tel: +39 06 8096828; fax: +39 06 80968229; email: gastro2001@aisc.it

3rd European Federation of Autonomic Societies (EFAS)
The third European Federation of Autonomic Societies (EFAS) meeting in conjunction with the annual meeting of the sections “Autonomic nervous system” of the German Neurological Society, “Diabetes and Nervous System” of the German Neurological Society, and “Autonomic Nervous System” at the University of Erlangen-Nuremberg, Germany, will be held in Erlangen, Germany on 26–28 April 2001. Abstract deadline: 20 December 2000. Further information: Professor Dr M J Hila, Department of Neurology, University of Erlangen-Nuremberg, Schwabachanlage 6, D-91054 Erlangen, Germany. Tel: +49 9131 8534328; fax: +49 9131 8534328; website: www.neurologie.med.uni-erlangen.de/oeffentliche_Veranstaltungen.htm

Gastroenterology and Endotherapy: XIXth European Workshop
This course, to introduce the experienced gastroenterologist to the growing field of therapeutic endoscopy, will be held on 18–20 June 2001 in Brussels, Belgium. Further information: Mrs Nancy Beaufrez, Gastroenterology Department, Erasme Hospital, Route de Lennik 808, B-1070 Brussels. Tel: +32 02 555 49 00; fax: +32 02 555 49 01; email: beaufrez@ulb.ac.be

Summer Abdominal Imaging Conference
A five day course designed for the practising radiologist with a primary interest in abdominal imaging, emphasising the most recent advances in helical CT, MRI, US, and gastrointestinal imaging. It will be held on 23–27 July 2001 in Banff Springs, Canadian Rockies. Twenty-five category 1 credit hours. Further information: Janice Ford Benner, University of Pennsylvania Medical Center (Radiology), 3400 Spruce Street, 1 Silverstein Building, Philadelphia, PA 19104, USA. Tel: +1 215 662 6904; fax: +1 215 349 5925.
Survivingene expression and prognosis in recurrent colorectal cancer

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