PostScript

LETTERS

Endoscopic evaluation for cytomegalovirus enterocolitis after allogeneic haematopoietic stem cell transplantation

Cytomegalovirus (CMV) disease and graft versus host disease (GVHD) are serious complications after allogeneic haematopoietic stem cell transplantation (allo-SCT).¹ As clinical manifestations overlap,² it is difficult to make an early and accurate diagnosis of CMV enterocolitis in patients with gastrointestinal GVHD. This study aimed to estimate the usefulness of endoscopic examination for CMV enterocolitis after allo-SCT.

Between 1999 and 2003, 425 patients received allo-SCT at the National Cancer Centre Hospital. Eighty seven patients with gastrointestinal symptoms underwent colonoscopy, and gastrointestinal GVHD was diagnosed in 75 patients. Thirty three of these patients with a median age of 46 years (range 4-67) who had persistent diarrhoea and/or abdominal pain despite optimal treatment underwent repeat colonoscopy. After informed consent was obtained, we examined from the terminal ileum to the rectum by colonoscopy. Biopsy specimens were obtained from severely involved areas. If we

could not detect abnormal findings, biopsy specimens were taken from normal appearing areas. Diagnosis of CMV enterocolitis and management of CMV reactivation have been reported previously.³ A univariate analysis using Fisher's exact test was performed to compare differences in endoscopic findings between patients with and without CMV enterocolitis. A *p* value of <0.05 was considered significant.

CMV enterocolitis was diagnosed in eight patients; the remaining 25 patients served as controls. Symptoms in patients with and without CMV enterocolitis, respectively, were abdominal pain (*n* = 4 and *n* = 12), bloody stool (*n* = 1 and *n* = 6), and watery diarrhoea (*n* = 7 and *n* = 25). All of the patients with CMV enterocolitis tested positive for CMV antigenaemia with median levels of 84.5 per 50 000 cells (range 8-932) when they underwent colonoscopy. Eight controls tested positive for CMV antigenaemia. Median levels were 0 per 50 000 cells (range 0-17).

For endoscopic findings, patients with and without CMV enterocolitis, respectively, showed erosion (*n* = 5 and *n* = 5), ulceration (*n* = 1 and *n* = 1), oozing (*n* = 2 and *n* = 5), redness (*n* = 7 and *n* = 15), oedema (*n* = 1 and *n* = 6), disappearance of vascular network (*n* = 8 and *n* = 21), atrophic villi (*n* = 2 and *n* = 4), rough mucosa (*n* = 6 and *n* = 18), and exfoliation of mucosa (*n* = 3 and *n* = 10) (fig 1). Erosion was more frequent in patients with CMV enterocolitis than in controls (*p* = 0.036). Gastrointestinal GVHD was

diagnosed in seven patients with CMV enterocolitis and in all of the controls. A total of 46 biopsy specimens were obtained from the eight patients with CMV enterocolitis (table 1). CMV inclusion bodies were found in 18 specimens, most of which were obtained from erosions (*n* = 13). CMV inclusion bodies were distributed widely from the terminal ileum to the rectum.

The present study suggested endoscopic findings such as erosions were a useful marker for early diagnosis of CMV enterocolitis. Most of the CMV inclusion bodies were obtained from erosions. In contrast, only one had punched out ulcerations which had been considered characteristic of CMV enterocolitis.⁴⁻⁶ In case No 7, the only patient with punched out ulcerations, three specimens obtained from ulcerations were negative for CMV inclusion bodies while one specimen obtained from erosions showed inclusion bodies. CMV infected vascular endothelium is considered to narrow the vessels and to induce local ischaemia and eventually erosions and ulcerations.⁷ The small size of the erosions compared with that of ulcerations may enable biopsy of the whole lesion and the high yield of CMV infected cells. Biopsy of erosions can be reasonably effective for early diagnosis of CMV enterocolitis.

Colonoscopies in transplant recipients are often restricted to the rectum and sigmoid colon to minimise colonoscopic invasion. If we had examined only the rectum and sigmoid colon, CMV enterocolitis in six of the eight patients would have been missed. Total colonoscopy is necessary to make an early diagnosis of CMV enterocolitis. The present study suggests the usefulness and necessity of colonoscopy for an early diagnosis of CMV enterocolitis after allo-SCT.

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doi: 10.1136/gut.2005.087031

Conflict of interest: None declared.

Figure 1 Endoscopic findings of cytomegalovirus (CMV) enterocolitis. (A) Erosion. (B) Erosion (after indigo carmine dye spray). (C) Ulceration. (D) Oozing.

Table 1 Endoscopic findings and localisation of cytomegalovirus (CMV) inclusion bodies in patients with CMV enterocolitis

	Colonoscopic findings				Localisation of CMV inclusion bodies							CMV antigenaemia
	Erosion	Ulceration	Oozing	Other	T/I	Caecum	A/C	T/C	D/C	S/C	Rectum	
Case 1	NA	NA	1/3	0/2					1/2‡	0/1	0/2	50
Case 2	1/2	NA	NA	0/5		1/2‡	0/1‡	0/1	0/1	0/1	0/1	14
Case 3	1/4	NA	NA	0/3	0/1	0/1	0/1	1/1‡	0/1‡	0/1‡	0/1‡	8
Case 4	NA	NA	1/5	NE						0/2	1/3	296
Case 5	NA	NA	NA	3/3*	1/1	1/1					1/1	61
Case 6	5/5	NA	NA	NE				3/3	2/2			932
Case 7	1/1	0/3†	NA	NE	0/1			1/4‡				871
Case 8	5/7	NA	NA	0/2	0/2	2/2‡	0/2	3/3‡				108

Each column represents total CMV inclusion bodies per biopsy specimens.

*Biopsy specimens were obtained from the edge of the exfoliation of the mucosa.

†Punched out ulceration.

‡Presence of erosion.

NA, not applicable; NE, not examined; T/I, terminal ileum; A/C, ascending colon; T/C, transverse colon; D/C, descending colon; S/C, sigmoid colon.

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Hyperhomocysteinaemia and vascular disease in liver patients

We read with interest the case report by Buchel *et al* (*Gut* 2005;**54**:1021–3). The authors reported on a patient with portal hypertension, nodular regenerative hyperplasia, and portal thrombosis that presented an avascular hip necrosis after liver transplantation (OLT). The authors suggested that the whole clinical picture might stem from hyperhomocysteinaemia (high Hcy) and 677C→T heterozygosity for the common gene of methylene tetrahydrofolate reductase (MTHFR).

Although the history is suggestive of this hypothesis, high Hcy might also be a secondary phenomenon. It is not clear whether high Hcy was demonstrated in a sample obtained before (as suggested in table 1) or after (as suggested in the text) OLT. In both cases, Hcy might be elevated as a consequence of either liver disease or drug treatment. Liver disease per se raises Hcy due to the multiple metabolic problems generated by a failing liver, including low folate levels, altered transsulphuration/transmethylation pathway, and decreased renal function. High Hcy is present in 50% of liver disease patients,

and values as high as 30 µmol/l are not uncommon in end stage disease,¹ independently of MTHFR polymorphism. After OLT, a specific effect of tacrolimus on Hcy metabolism and concentration is well documented. Both calcineurin inhibitors (cyclosporin and tacrolimus) are known to interfere with the folate dependent remethylation of Hcy, thus raising plasma levels to values in the pathological range. The problem is well documented in patients following renal,² cardiac,³ or liver transplantation.¹ In a recent analysis of 230 patients subjected to OLT, we found 26 cases with fasting Hcy ≥30 µmol/l in the late post-transplant phase, independently of MTHFR polymorphism.⁴

Also, the relationship between high Hcy and MTHFR polymorphism deserves comment. The MTHFR gene independently and unfavourably influences homocysteine metabolism but high Hcy levels are mainly observed in subjects with low folate levels,⁵ indicating a low phenotypic expression. Therefore, the presence of the genetic variant, mainly in its heterozygous form, might be an occasional phenomenon without clinical significance.

In conclusion, although the clinical history of the patients raises the suggested pathogenic role of Hcy and genetic predisposition, no clues can be made on the “egg and chicken” sequence, particularly in a patient with positive markers for hepatitis B infection.

Adequate folate intake or pharmacological supplementation may certainly overcome genetic predisposition to high Hcy, but may also decrease Hcy, independently of any gene defect, and remains a suitable therapeutic option to prevent additional vascular problems.

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Competing interest: None declared.

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Second gastric cancers among patients with primary sporadic and familial cancers in Sweden

Gastric cancer ranks as the fourth most common cancer and the second most frequent cause of cancer death worldwide.¹ The aetiology includes causes such as *Helicobacter pylori* infection (for distal gastric cancer but not for cardia cancer),² dietary imbalance, smoking, and genetic factors.^{2–3} Estimation of the incidence of second primary cancers may provide valuable insight into the aetiology and shared risk factors with the initial cancer. However, as gastric cancer patients have poor survival,⁴ a study of second malignancies after primary gastric cancer may not be informative. Instead, we examined the occurrence of second gastric cancers following any first cancers, based on the nationwide Swedish Family Cancer Database. This database has been described in detail previously.⁵ Briefly, it was created by linking information from the Multigenerational Register, censuses, Cancer Registry, and death notifications. The database has an almost complete follow up of registered cancer patients and it provides a unique opportunity to quantify the risks of developing second gastric cancers among all primary cancer patients. Person years at risk were accumulated for each subject from the data of diagnosis of the first malignancy to that of a second gastric cancer, death, emigration, or 31 December 2002, which came first. Standardised incidence ratio (SIR) was used to estimate the risks of second gastric cancers, adjusted for sex, age, period, residence, and socioeconomic level. Confidence intervals were calculated assuming a Poisson distribution. Family history included all first