Assessment of the early regenerative therapeutic response in graft versus host disease using high definition technology with virtual i-Scan chromoendoscopy

Fig. 1 **a,b** High definition with i-Scan combination view in a 42-year-old man with a history of allogeneic sibling stem cell transplantation. Note the regenerative honeycomb mucosal pattern in the colon. **c,d** High definition with i-Scan virtual chromoendoscopic view again showing the honeycomb, flowery mucosal pattern and healing ulcer.

Fig. 2 **a,b** Histological section showing elongated crypts in the regenerating mucosa (hematoxylin and eosin, magnification $\times 200$).

The gastrointestinal tract is the second most commonly involved organ system in graft versus host disease (GvHD) following allogeneic stem cell transplantation, and its involvement is associated with a worse prognosis [1,2]. White light endoscopy findings are nonspecific and often unhelpful in the diagnosis of GvHD and evaluation of its response to therapy. Conventional histological examination of intestinal biopsy samples still represents the gold standard in GvHD diagnosis [3]. Moreover, after allogeneic stem cell transplantation, it could be potentially dangerous to carry out multiple biopsies and may require transfusion of erythrocytes, platelets, or coagulation factors. Here, we describe novel endoscopic findings associated with healing of the colonic mucosa in a patient with GvHD, obtained by high

definition (HD+) technology with i-Scan virtual chromoendoscopy (Pentax Medical, Tokyo, Japan).

A 42-year-old man, who underwent allogeneic sibling stem cell transplantation for chronic lymphocytic leukemia, presented on day 79 with acute symptoms including vomiting, abdominal pain, and diarrhea. Colonoscopy showed multiple ulcers in the left side of the colon. Biopsy specimens were taken and pathological examination revealed colonic GvHD, grade 3/4. The patient was started on high-dose intravenous steroids, followed by anti-thymocyte globulin (ATG), and – subsequently – extracorporeal photopheresis. Flexible sigmoidoscopy with HD+ and i-Scan virtual chromoendoscopy was carried out to characterize the endoscopic findings of the response to therapy in

GvHD. A novel endoscopic regenerative honeycomb mucosal healing pattern in GvHD (► Fig. 1) was noted; the pattern characteristically consisted of an exuberant elongated, flowery appearance. The diagnosis was confirmed by histological examination, which demonstrated elongated regenerative crypts in the mucosa (► Fig. 2).

HD+ with i-Scan endoscopy is an image-processing technology that analyzes the endoscopic mucosal and vascular pattern in real time [4]. It has shown promise in differentiating between colonic neoplastic and non-neoplastic lesions, in characterizing mucosal healing in inflammatory bowel disease, and for in vivo diagnosis of duodenal villous atrophy in celiac disease [5]. Here we have reported the novel finding of a honeycomb or flowerlike pattern in the regenerating mucosa using HD+ with i-Scan technology in the assessment of colonic mucosal outcome after therapy for GvHD.

Endoscopy_UCTN_Code_CCL_1AD_2AJ

Competing interests: None

Marietta Iacucci¹, Andrew Daly², Ahsan Chaudhry², Peter Duggan², Xianyong Gui³, Jonathan Love¹, Subrata Ghosh¹

¹ Division of Gastroenterology and Hepatology, University of Calgary, Calgary AB, Canada

² Department of Hematology, Bone Marrow Transplantation Group, Faculty of Medicine, University of Calgary, Calgary AB, Canada

³ Department of Pathology University of Calgary, Calgary AB, Canada

References

- 1 Gratwohl A, Brand R, Apperley J et al. Graft-versus-host disease and outcome in HLA-identical sibling transplantations for chronic myeloid leukemia. *Blood* 2002; 100: 3877–3886
- 2 Shulman HM, Kleiner D, Lee SJ et al. Histopathologic diagnosis of chronic graft-versus-host disease: National Institutes of Health Consensus Development Project on criteria for clinical trials in chronic graft-versus-host disease: II. Pathology Working Group Report. *Biol Blood Marrow Transplant* 2006; 12: 31–47

3 Kreisel W, Dahlberg M, Bertz H et al. Endoscopic diagnosis of acute intestinal GVHD following allogeneic hematopoietic SCT: a retrospective analysis in 175 patients. *Bone Marrow Transplant* 2012; 47: 430–438

4 Kodashima S, Fujishiro M. Novel image-enhanced endoscopy with i-scan technology. *World J Gastroenterol* 2010; 16: 1043–1049

5 Cammarota G, Ianiro G, Sparano L et al. Image-enhanced endoscopy with i-Scan technology for the evaluation of duodenal villous patterns. *Dig Dis Sci* 2013; 58: 1287–1292

Bibliography

DOI <http://dx.doi.org/10.1055/s-0033-1344823>
Endoscopy 2013; 45: E389–E390
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

Corresponding author

Marietta Iacucci
Division of Gastroenterology
Department of Medicine
University of Calgary
Calgary AB
Canada
miaacucci@ucalgary.ca