

A confocal view of the intestinal microcirculation in a patient with Crohn disease and portal vein thrombosis

A 24-year-old man with ileocolonic Crohn disease presented with abdominal pain and ascites. Color Doppler ultrasonography and computed tomography revealed complete thrombosis of the portal vein, superior mesenteric vein, and splenic vein, with newly formed collaterals and hyperemia of adjacent intestinal structures. Esophagogastrosocopy showed signs of portal hypertension including secondary esophageal varices, fundus varices, portal hypertensive gastropathy, and duodenopathy (● Fig. 1).

In addition, probe-based confocal laser endomicroscopy (pCLE) displayed marked enhancement of the reticular pattern of duodenal microvessels and distinctive dilatation of microvessels within the duodenal mucosa (● Fig. 2 and ● Video 1) compared with healthy controls (● Fig. 3).

Quantitative evaluation also revealed a significant increase in vessel density (area of perfused vessels per area of duodenal villi, functional capillary density [FCD]) within the mucosa (FCD = 0.37) compared with healthy controls (FCD = 0.27). The patient received intravenous heparin, which was later substituted with warfarin.

Portal vein occlusion is a rare but serious complication of Crohn disease, and patients with inflammatory bowel diseases have a threefold increased risk of venous thromboembolism [1]. Multiple aetiologic factors are thought to be responsible: thrombocytosis, decreased levels of antithrombin III, increased levels of fibrinogen, and clotting factors V and VIII, and postsurgical and septic complications [2]. Due to interruption of portal blood flow, there is vasodilatation of the hepatic arterial bed with development of collateral veins [3]. Therapy comprises anticoagulation, although systemic and locally applied thrombolytic agents have been successfully used [4]. In the present patient,

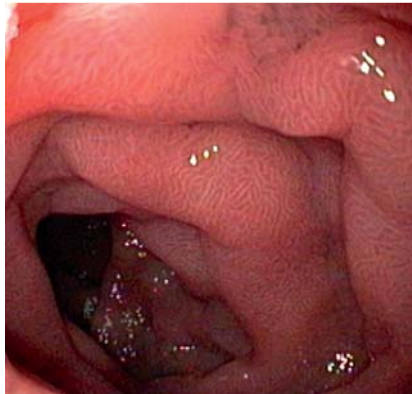


Fig. 1 Duodenal mucosa with signs of portal hypertension.

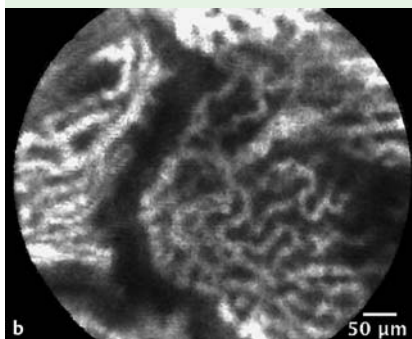
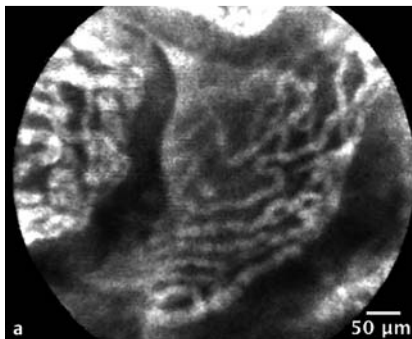


Fig. 2 a, b Probe-based confocal laser endomicroscopic (pCLE) images showing a distinctive reticular network of duodenal mucosal vascularization in portal vein thrombosis.

besides an acute flareup of Crohn disease 2 months ago, we could not elucidate any particular risk factor for developing portal vein thrombosis.

The recently developed technique of pCLE provides endoscopic images at the cellular level. Intravenously administered fluorescein helps display the intestinal mucosal vessels before diffusing into the surround-

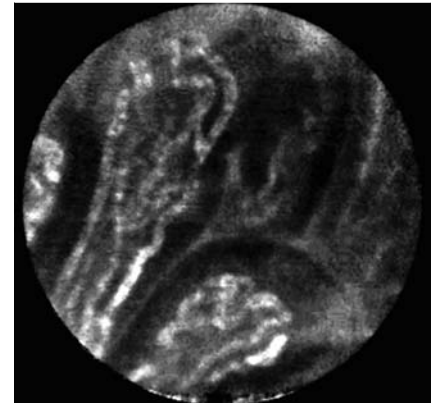


Fig. 3 Probe-based confocal laser endomicroscopic (pCLE) image showing the pattern of reticular network of duodenal mucosal vascularization in a healthy subject.

ing tissue, facilitating excellent in-vivo imaging of the capillary network. Therefore, pCLE might become an important diagnostic tool in the in-vivo evaluation of intestinal microvascularization in various gastrointestinal disorders, which has not been evaluated sufficiently so far [5].

Endoscopy_UCTN_Code_CCL_1AD_2AD

Competing interests: None

S. Hagel, T. Bruns, A. Stallmach, C. Schmidt

Division of Gastroenterology, Hepatology and Infectology, Department of Internal Medicine II, Friedrich-Schiller-University, Jena, Germany

Video 1

Probe-based confocal laser endomicroscopy (pCLE) showing the distinctive pattern of reticular network of duodenal mucosal vascularization in a patient within portal vein thrombosis.

References

- 1 Bernstein CN, Blanchard JF, Houston DS et al. The incidence of deep venous thrombosis and pulmonary embolism among patients with inflammatory bowel disease: a population-based cohort study. *Thromb Haemost* 2001; 85: 430–434
- 2 Lam A, Borda IT, Inwood MJ et al. Coagulation studies in ulcerative colitis and Crohn's disease. *Gastroenterology* 1975; 68: 245–251
- 3 Valla DC, Condat B, Lebre C. Spectrum of portal vein thrombosis in the West. *J Gastroenterol Hepatol* 2002; 17 (Suppl 3): S224–S227
- 4 Schafer C, Zundler J, Bode JC. Thrombolytic therapy in patients with portal vein thrombosis: case report and review of the literature. *Eur J Gastroenterol Hepatol* 2000; 12: 1141–1145
- 5 Becker V, Vieth M, Bajbouj M et al. Confocal laser scanning fluorescence microscopy for in vivo determination of microvessel density in Barrett's esophagus. *Endoscopy* 2008; 40: 888–891

Bibliography

DOI 10.1055/s-0030-1256161

Endoscopy 2011; 43: E126–E127

© Georg Thieme Verlag KG Stuttgart · New York ·
ISSN 0013-726X

Corresponding author

S. Hagel

Division of Gastroenterology,
Hepatology and Infectology,
Department of Internal Medicine II
Friedrich-Schiller-University, Jena, Germany
stefan.hagel@med.uni-jena.de