

CORRESPONDENCE

# Non-occlusive mesenteric ischemia: the wolf in sheep's clothing



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We congratulate Reintam Blaser et al. for their insightful overview of the management of acute mesenteric ischemia (AMI) [1]. Nonspecific symptoms and the lack of established biomarkers complicate the diagnosis of AMI, likely resulting in numerous undetected cases [2]. Non-occlusive mesenteric ischemia (NOMI) is rare and it affects primarily patients with critical illness in the intensive care unit (ICU) [2, 3]. However, diagnosing NOMI is difficult and prognosis is poor with mortality rates exceeding 70% [2, 4]. Computed tomography angiography (CTA) is the gold standard for diagnosing AMI, yet, diagnostic accuracy is low for NOMI [4]. Since NOMI often affects the colon, colonoscopy can be a useful diagnostic tool in these patients [4].

To further assess diagnostic utility of CTA and endoscopy, we retrospectively analyzed all patients who received CTA for suspected colon ischemia and consecutive colonoscopy between 03/2009 and 08/2020 in our center ( $n=125$ ). CTA detected unspecific signs of intraabdominal pathology, such as free abdominal fluid (79/125, 63.2%), bowel wall thickening (70/125 patients, 56%), and concomitant local inflammatory reaction of the surrounding fat tissue (28/125 patients, 22.4%). Less frequent, direct evidence of reduced colon perfusion (10/112, 8.9%), stenosis (17/112, 15.2%) or even occlusion (4/112, 3.6%) of superior or inferior mesenteric arteries was found (Table 1).

In only 58/125 patients (46.4%), colon ischemia was confirmed by endoscopy. Out of these, 48/58 (82.8%) were treated in the ICU, 26/58 (44.8%) were mechanically ventilated and 4/58 (6.9%) were supported with extracorporeal membrane oxygenation when AMI was diagnosed (supplementary Table 1). However, CTA was not able to reliably distinguish between patients with or without colon ischemia. Only distension of the colon [14/58 (24.1%) vs. 7/67 (10.4%);  $p=0.041$ ] and local inflammatory reaction of the fat tissue [20/58 (34.5%) vs. 8/67 (11.9%);  $p=0.003$ ] were significantly more common in patients with colon ischemia compared to those without. Yet, overall, these signs occurred only rarely in all patients both with and without AMI. All other CTA findings were found equally frequent in both groups (Table 1 and electronic supplementary material). None of the typical diagnostic criteria for colon ischemia in CTA assessed in this cohort proved both high sensitivity and specificity for detection of colon ischemia (supplementary Table 4).

Given the low accuracy of CTA in detecting NOMI, relying on this diagnostic measure alone is not advisable. Colonoscopy, as a complementary, safe, cost-effective, and widely available diagnostic tool may enhance the detection of colon ischemia. Colonoscopy can help confirm or rule out the suspicion of acute colon ischemia, particularly in critically ill patients in the ICU—even without the risks associated with and the resources needed for CTA assessment.

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**Table 1 Computed tomography angiography findings in patients with and without endoscopy confirmed colon ischemia**

	All patients (n = 125)	No endoscopic evidence of colon ischemia (n = 67)	Endoscopy confirmed colon ischemia (n = 58)	p value
Thickening of bowel wall	70 (56)	39 (58.2)	31 (53.4)	0.593
Sigmoid colon	35 (28)	24 (35.8)	11 (19)	0.036
Descending colon	33 (26.4)	18 (26.9)	15 (25.9)	0.899
Transverse colon	27 (21.6)	16 (23.9)	11 (19)	0.505
Ascending colon	31 (24.8)	18 (26.9)	13 (22.4)	0.565
Coecum	13 (12.8)	10 (14.9)	6 (10.3)	0.445
Local inflammatory reaction of fat tissue	28 (22.4)	8 (11.9)	20 (34.5)	0.003
Free abdominal fluid	79 (63.2)	42 (62.8)	37 (63.8)	0.898
Infarction of other organs	21 (16.8)	12 (17.9)	9 (15.5)	0.721
Distension of the colon	21 (16.8)	7 (10.4)	14 (24.1)	0.041
Pneumatosis Intestinalis	16 (12.8)	9 (13.2)	7 (12.1)	0.820
Mucosal contrast enhancement	14 (12.5) <sup>a</sup>	5 (8.3) <sup>b</sup>	9 (17.3) <sup>c</sup>	0.152
Reduced colonic perfusion	10 (8.9) <sup>a</sup>	3 (5) <sup>b</sup>	7 (13.5) <sup>c</sup>	0.183
Stenosis of SMA or IMA	17 (15.2) <sup>a</sup>	6 (10) <sup>b</sup>	11 (21.2) <sup>c</sup>	0.101
Occlusion of SMA or IMA	4 (3.6) <sup>a</sup>	1 (1.7) <sup>b</sup>	3 (5.8) <sup>c</sup>	0.336

Data are n (%)

SMA superior mesenteric artery, IMA inferior mesenteric artery

<sup>a</sup> n = 112

<sup>b</sup> n = 60

<sup>c</sup> n = 52

### Supplementary Information

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### Data availability

All data will be available from the corresponding author on reasonable request.

### Declarations

### Conflicts of interest

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