

**Case Letter**

# 'Runs' from a run: A case of exercise induced ischemic colitis

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World J Emerg Med 2017;8(4):302–304

DOI: 10.5847/wjem.j.1920–8642.2017.04.010

## Dear editor,

Marathon running is a strenuous activity that places stress on the gastrointestinal system.<sup>[1]</sup> In fact, 30% to 81% of runners report gastrointestinal complaints, which include bloating, abdominal cramps, rectal incontinence, and gastrointestinal bleeding.<sup>[1–3]</sup>

Exercise-induced ischemic colitis represents an extreme but rare manifestation of gastrointestinal pathology that can occur in marathon participants.<sup>[1]</sup> It is thought to be caused by an exercise-triggered catecholamine surge, which in turn results in vasoconstriction and the shunting of blood away from the splanchnic circulation and towards the muscles.<sup>[4,5]</sup> The shunt can be exacerbated by dehydration in endurance athletes leading to a state of "hypoperfusion" in the gut rendering it prone to ischemia.<sup>[6,7]</sup>

A typical presentation involves sharp, diffuse abdominal pain along with frequent and loose bowel movements that are accompanied by visible blood or maroon-coloured stools.<sup>[4]</sup> Symptoms appear during or shortly following an endurance event.<sup>[4]</sup> Potential risk factors include NSAID use, greater training intensity or running distances, and poor hydration.<sup>[8–12]</sup>

## CASE

A previously healthy 30-year-old female presented to the emergency department (ED) with an acute history of diffuse abdominal pain and diarrhea with frank blood. She was a novice marathon runner and

her symptoms began 6 hours following a marathon run earlier in the day. The patient denied any vomiting or other gastrointestinal symptoms and the pain was non-radiating. She had no significant medical history, was not on any medications, and denied any recreational drug use. Her vital signs on presentation were within normal limits. Her physical exam was significant for mild dehydration and mild diffuse abdominal tenderness with no focal area of maximal tenderness. There was no guarding and there were no peritoneal signs. The remainder of her physical exam was unremarkable. A digital rectal exam was performed for fecal occult blood which was positive. There were no hemorrhoids present on exam.

Laboratory investigations included a complete cell count, serum electrolytes, liver enzymes, lipase, B-hCG and a dipstick urinalysis. Her CBC revealed a mild elevation in her WBC to  $13.2 \times 10^9/L$ . The remainder of her blood work was within normal limits, while her urinalysis showed trace ketones.

Her ED course included intravenous fluid replacement and observation for 6 hours, and she remained hemodynamically stable throughout her stay. Upon symptom resolution, she was discharged to follow up with her family physician and there were no return visits to any emergency department on follow up.

## DISCUSSION

Ischemic colitis, the most common form of intestinal ischemia, can be precipitated by strenuous exercise.<sup>[13]</sup>

Physiological explanations for this phenomenon include an increase in sympathetic tone and shunting of blood, which can result in mesenteric blood flow being reduced by as much as 80% during peak exercise.<sup>[14]</sup> Traditionally, "watershed" areas, such as the splenic flexure and the sigmoid colon are thought to be the most prone to ischemia due to their limited collateral supply.<sup>[15]</sup> However, the majority of cases of ischemic colitis in the literature are localized to the proximal colon. This proximal predilection in low flow states such as shock can be attributed to vasospastic reflex, shunting, and the cecum's blood supply from end arteries and an inconstant arcade.<sup>[16]</sup>

Although "runner's diarrhea" is common among marathon participants, the presence of bloody bowel movements after an endurance event should raise the possibility of ischemic colitis.<sup>[1,9]</sup> History questions regarding risk factors for ischemia such as personal or family history of hypercoagulability, medication history, risk factors for hypovolemia (environmental conditions (heat), amount of fluid ingested) should all be posed.<sup>[1]</sup> Given the small number of cases in the literature, however, no patterns have emerged in terms of specific risk factors for exercise-induced ischemic colitis. It is also important, with patients in this age range, to rule out other possible causes of rectal bleeding such as infectious colitis and inflammatory bowel disease.<sup>[13]</sup>

The diagnosis of exercise-induced ischemic colitis is largely a clinical diagnosis. Laboratory results in these cases are generally normal, however, in severe ischemia an elevated white blood cell count, lactate or LDH level can be seen.<sup>[15]</sup> However, none of these markers are sufficiently specific to diagnose ischemic colitis.<sup>[15]</sup>

The value of abdominal imaging in the diagnosis of exercise-induced ischemic colitis is limited and largely used to exclude other significant causes of abdominal pain. Kyriakos et al.'s case series on exercise-induced ischemic colitis found segmental wall thickening to be the most common CT finding.<sup>[17]</sup> Colonoscopy is the most sensitive method for diagnosis but there are no specific histological or endoscopic findings with the exception of colonic gangrene.<sup>[18]</sup> In the case we presented, no imaging was warranted clinically.

Treatment is generally conservative and most cases are reversible and patients improve within 24–48 hours. Fluid resuscitation, bowel rest, and pain control, with close monitoring for peritonitis and fever is sufficient to treat the majority of cases.<sup>[1,9]</sup> Data for the use of prophylactic antibiotics is insufficient but may be

warranted in rare cases that progress to gangrenous colitis.<sup>[9,15]</sup> Similarly, surgical resection of ischemic bowel is rarely required.<sup>[7]</sup> Failure of conservative management should warrant further work up to identify and rule out alternative causes.

## CONCLUSION

In conclusion, gastrointestinal symptoms are very common following vigorous exercise, however, the presence of bloody bowel movements following an endurance event should prompt the physician to consider the diagnosis of ischemic colitis. The diagnosis is primarily clinical and most cases do not require aggressive treatment or monitoring and are self limiting. With the growing popularity of endurance events across North America, however, emergency physicians should anticipate seeing more cases like this in the future.

**Funding:** None.

**Ethical approval:** Not needed.

**Conflicts of interest:** The authors declare that there are no conflicts of interest related to the publication of this paper.

**Contributors:** Faress A proposed the study and wrote the first draft. All authors read and approved the final version of the paper.

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*Received April 20, 2017*

*Accepted after revision August 21, 2017*