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Massive bowel infarction in a severe burn patient: a case report

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Introduction

Abdominal complications in the setting of burns can be severe with a mortality rate of 45% [1]. Bowel ischaemia can develop at any time during the admission [1,2,3]. Severe burns patients are at increased risk of bowel infarction due to cardiovascular effects secondary to decreased intravascular volume and massive fluid shifts. Even with appropriate fluid resuscitation in the critical care setting, bowel oedema and intra-abdominal hypertension can reduce bowel venous outflow, resulting in bowel ischaemia [2].

Case Description

This case involves a 45-year old male who developed transverse and left colon infarction with an associated large perforation of the transverse colon during an acute burn admission following a gas explosion. The patient sustained full thickness abdominal burns as part of his 78% total burn surface area. Managed in the intensive care setting whilst intubated and on vasopressor support, his acute abdomen was detected on repeat CT imaging for suspected intestinal ileus on day 12. The patient underwent urgent laparotomy for total colectomy and ileostomy through his abdominal burn. The laparotomy incision was closed with staples and the stoma secured with 4-0 PDS in superficial dermal burned skin. Judicious post-operative wound management and stoma care was integral to achieve a functioning stoma and wound healing of his laparotomy site.

Table 1: Literature on bowel infarction in burns patients

Reference	Study Design	Patient number	Ischaemic bowel complications	Incidence	Notes
Muschitz et al, 2015	Retrospective	814	17	2.1%	Non-occlusive mesenteric ischaemia prevails as the cause of the occurrence of intestinal necrosis in burns patients Embolic ischaemia occurs in the first week
Huzar et al, 2011	Retrospective	1129	10	0.9%	Mortality associated with 75% of cases. Assoc between mortality and worsening lactate and BE, open abdomen and vasopressor use
Markell et al, 2009	Retrospective	1825	31	1.7%	Ischaemic bowel was associated with abdominal compartment syndrome presents acutely (<3 days) but occurred alone later during the patient's admission
Kowal-Vern et al, 1997	Retrospective	2114	10	0.5%	Increase in TBSA was associated with ischaemic necrotic bowel disease
Goodwin et al, 1982	Retrospective	2980	4	>0.1%	Abdominal incisions dehiscenced in 31% of patients with abdominal complications
Kirksey et al, 1968	Retrospective	1291	37	2.9%	Study preceded the widespread use of CT angiography, highlighted the incidence of Curling ulcer in burn's patients. Included 4 patients with SMA obstruction and 33 patients with intestinal ischaemia.

Discussion

A search of Pubmed and MEDLINE using keywords "burns/complications" and "intestinal obstruction or intestines/blood supply or colon/blood supply or abdominal injuries" was performed. 61 articles were reviewed with only 6 studies suitable for analysis with regards to bowel ischaemia/infarction in burns patients (see Table 1).

Gastrointestinal complications in burn patients have a mortality of 45% which increases to 75% for patients with massive bowel infarction [1,3]. Classically, it is seen in patients over 7 days post initial injury [2,3]. The diagnosis can be difficult in the critically ill patient, however worsening base excess, increased lactate levels and ileus may prompt further investigation [3].

Conclusion

Surgical management of bowel infarction is complicated in the setting of burns with regards to diagnosis and assessment. This is worrying as it typically presents late and has a high risk of mortality.

References:

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