Suspected lower GI bleeding in ED: from bleeding symptoms to diagnosis

Lower gastrointestinal bleeding (LGIB) is a common medical problem in emergency medicine. The few existing data concern LGIB in patients hospitalized in gastroenterology departments (GED) or after endoscopy [1-6]. These patients represent only a part of LGIB cases managed in emergency departments (EDs). We aimed to describe the epidemiologic characteristics and management of patients with suspected LGIB in EDs.

We performed an observational, multicentric, prospective study during 4 consecutive days in November 2013. This study was performed simultaneously and with a similar method to another one that assessed upper gastrointestinal bleeding in EDs [7]. The 110 EDs participating in the French Emergency Medicine Research [IRU] network, coordinated by the French Society of Emergency Medicine [SFMU], contributed to the study [7,8]. All adult patients with suspected LGIB were included. LGIB was defined as externalisation of red blood by the rectum, including bloody stools. Patient's characteristics, clinical presentation including severity signs and hemoglobinemia level, medical history and usual treatments were collected. Treatments in EDs, endoscopy and computed tomography (CT) data were noted, such as outcomes (hospitalized or discharged patients) and when hospitalized, final diagnosis, length of stay and hospital deaths. The analysis was mostly descriptive. Ethics committees approved the study.

During the study, 149 patients with suspected LGIB were included (0.32% of 46,190 ED's visits). The estimated incidence was 93/100,000 inhabitants. The main patient characteristics are shown in Table 1. Forty-two (28%) were discharged from ED. Among the 107 hospitalized patients, 75 (70%) underwent endoscopy, 44 colonoscopy, 20 colonoscopy and upper endoscopy, and 11 only upper endoscopy. A haemorrhagic lesion was identified for 92/99 (93%) hospitalized patients (Table 2). Diverticulosis and colitis (infectious, inflammatory and ischemic) were the main lesions, 22/99 (22%) and 28/99 (28%) respectively. Anorectal lesions concerned 17/99 (17%) patients. For 12/99 (12%) patients, the final diagnosis was upper gastrointestinal bleeding. Thirty patients (20%) had at least one clinical severity sign (Table 1), and 4 (3%) were hospitalized in an intensive care unit. For 9, the haemoglobin level was <7 g/dL (6%) and 30 received a blood transfusion (20%). The median hospitalization stay was 4.5 days [Q1–Q3 2–10]. The hospitalization mortality rate was 5% ($n = 7$). Mortality was significantly higher among patients with high heart rate ($p = 0.024$), altered mental status ($p = 0.011$) and low haemoglobin level ($p = 0.013$) as well as exteriorized bleeding in the ED ($p = 0.042$) (Table 3). Mortality was also associated with receiving fluids ($p = 0.029$), transfusion ($p = 0.004$), catecholamines ($p = 0.048$) or vitamin K antagonist reversal ($p = 0.037$), and hospitalization in an intensive care unit ($p = 0.0003$).

The calculated incidence of LGIB seems higher than in the literature [1,3,9] and may be related to the fact that included patients presented all types of bleeding, among which weak bleeding due to anorectal lesions. Moreover, LGIB incidence has tended to increase this last decade due to the aging of the population and the increased use of antithrombotic treatments [2,3,9-12]. Almost one third of bleeding occurred in patients presenting no severity criteria and who were discharged from ED. These patients were younger, used less antithrombotics, less presented melena, and bleeding was less often seen in the ED. The remaining bleeding concerned hospitalized patients, mainly with colonic lesions.

Table 1
General characteristics and treatments of patients presenting lower gastrointestinal bleeding in emergency departments.

		Total n = 149	Hospitalized patients n = 107	Discharged patients n = 42	P value
Age (median [Q1–Q3])		67 [47–80]	74 [54–85]	49 [32–64]	<**0.0001**
Sex (men; n, %)[a]		73 (49)	52 (49)	21 (50)	1
Initial symptoms, n (%)	Hematochezia	149 (100)	107 (100)	42 (100)	1
	Melena	19 (13)	18 (17)	1 (2)	**0.015**
Medical history and treatment, n (%)[b]					
Known cirrhosis		9 (8)	7 (8)	2 (10)	
Known ulcer		12 (11)	12 (14)	0 (0)	
Non-steroidal anti-inflammatory drugs		8 (7)	5 (6)	3 (15)	0.16
Antithrombotic agents		48 (44)	46 (52)	2 (10)	**0.0004**
Comorbidity		41 (38)	36 (41)	5 (25)	0.21
Exteriorized bleeding in the ED, n (%)[a]		89 (60)	75 (71)	14 (33)	< **0.0001**
Clinical features of severity, n (%)					
Heart rate > 100 bpm		15 (10)	15 (14)	0 (0)	**0.006**
Systolic arterial pressure < 90 mm Hg		18 (12)	17 (16)	1 (2)	**0.024**
Marbling		4 (3)	4 (4)	0 (0)	0.58
Altered mental status		4 (3)	4 (4)	0 (0)	0.58
Haemoglobin level, n (%)[c]	<7 g/dL	9 (6)	8 (8)	1 (3)	<**0.0001**
	7–10 g/dL	39 (28)	38 (37)	1 (3)	
	>10 g/dL	91 (65)	57 (55)	34 (94)	
Treatments in ED, n (%)					
Nasogastric tube		6 (4)	6 (6)	0 (0)	0.18
Fluid administration		29 (19)	28 (26)	1 (2)	**0.0004**
Transfusion		30 (20)	29 (27)	1 (2)	**0.0004**
Proton pump inhibitors		47 (32)	47 (44)	0 (0)	<**0.0001**
Vasopressors		4 (3)	4 (4)	0 (0)	0.32
Catecholamines		1 (1)	1 (1)	0 (0)	1
Antibiotics[d] (excluding erythromycin)		9 (6)	9 (8)	0 (0)	0.06
Vitamin K antagonist reversal		7 (5)	7 (7)	0 (0)	0.19
Erythromycin		1 (1)	1 (1)	0 (0)	1
Upper endoscopy in ED, n (%)[d]		8 (5)	8 (7)	0 (0)	0.11
Computed tomography in ED, n (%)[d]		21 (14)	21 (20)	0 (0)	**0.0005**

ED = emergency department.
[a] For 148 patients.
[b] For 108 patients.
[c] For 139 patients
[d] For 147 patients.

Table 2
Final diagnosis (hospitalized patients).

Diagnosis	n = 99[a]
Diverticulosis	22 (22)
Colitis	28 (28)
Angiodysplasia	4 (4)
Cancer	9 (9)
Anorectal lesions	17 (17)
Upper gastrointestinal bleeding	12 (12)
None	7 (7)

[a] 8 missing data.

However, patients characteristics are similar to those observed in studies from GED, as melena frequency [3,12-18]. The diagnostic performance of endoscopy for LGIB was good as previously reported (68% to 97%) [1,14,19]. The etiological distribution of hospitalized LGIB patients is in accordance with recent literature [3,6,13-15]. Diverticular and colitis bleeding are the most common causes and angiodysplasia seems rare. Patients suspected of LGIB could have upper gastrointestinal bleeding, as observed in previous studies, justifying upper endoscopy in patients with significant rectal hemorrhage [1,16]. The severity and mortality rates are close to those observed in previous studies [3-6,13-15,18,19]. Death is not often related to bleeding itself but rather to co-morbidities. The main factors associated with mortality found in the literature are age, male sex, presence of co-morbidities, anticoagulant therapy, initial signs of severity and the need for transfusion [6,11,12,14,17,19-22]. Our data confirm a significant association with clinical severity signs, lower haemoglobin level, as well as management elements related to the initial severity. The number of transfusions suggests that the restrictive transfusion policy is not yet followed [13,23,24].

Our study main limitations are the short inclusion period of 4 days, the number of included patients ($n = 149$) and the few number of deceased patients that did not allow us to perform a multivariate analysis.

Epidemiological data of LGIB has never been studied in EDs. Almost 1/3 of patients with suspected LGIB were discharged from ED. Diverticulosis and colitis were the main lesions in hospitalized patients, but an upper bleeding must not be missed.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Table 3
Patient characteristics by survival status.

		Survivors n = 139[a]	Non-survivors n = 7[a]	*P* value
Age (median [Q1–Q3])		67 [46–80]	67 [57–89]	0.30
Sex (men; n, %)[b]		69 (50)	4 (57)	1
Initial symptoms, n (%)	Melena	17 (12)	2 (29)	0.23
Medical history and treatment, n (%)[c]				
Known cirrhosis		6 (6)	2 (29)	0.087
Known ulcer		11 (11)	1 (14)	0.58
Non-steroidal anti-inflammatory drugs		5 (5)	1 (14)	0.34
Antithrombotic agents		44 (44)	4 (57)	0.70
Comorbidity		38 (38)	3 (43)	1
Exteriorized bleeding in the ED, n (%)[b]		80 (58)	7 (100)	**0.042**
Clinical features of severity, n (%)				
Heart rate > 100 bpm		12 (9)	3 (43)	**0.024**
Systolic arterial pressure < 90 mmHg		15 (11)	2 (29)	0.19
Marbling		3 (2)	1 (14)	0.18
Altered mental status		2 (1)	2 (29)	**0.011**
Haemoglobin level, n (%)[d]	<7 g/dL	8 (6)	1 (14)	**0.013**
	7–10 g/dL	33 (26)	5 (71)	
	>10 g/dL	88 (68)	1 (14)	
Treatments in ED, n (%)				
Nasogastric tube		5 (4)	1 (14)	0.26
Fluid administration		25 (18)	4 (57)	**0.029**
Transfusion		25 (18)	5 (71)	**0.004**
Proton pump inhibitors		42 (30)	4 (57)	0.21
Vasopressors		3 (2)	1 (14)	0.18
Catecholamines		0 (0)	1 (14)	**0.048**
Antibiotics[e] (excluding erythromycin)		9 (7)	0 (0)	1
Vitamin K antagonist reversal		5 (4)	2 (29)	**0.037**
Erythromycin		1 (1)	0 (0)	1
Hospitalization in intensive care unit, n (%)		1 (1)	3 (43)	**0.0003**
Final diagnosis, n (%)[f] (hospitalized patients)	Diverticulosis	21 (23)	1 (14)	0.45
	Colitis	25 (27)	3 (43)	
	Angiodysplasia	4 (4)	0 (0)	
	Cancer	7 (8)	2 (29)	
	Ano-rectal lesions	17 (18)	0 (0)	
	Upper gastrointestinal bleeding	11 (12)	1 (14)	
	None	7 (8)	0 (0)	

ED = emergency department.
[a] 3 missing data.
[b] For 145 patients.
[c] For 106 patients.
[d] For 136 patients.
[e] For 144 patients.
[f] For 99 patients.

Declarations of interest

None.

Pierre-Clément Thiebaud
Emergency Department, Hôpital Saint-Antoine, Assistance Publique-Hôpitaux de Paris, Paris, France
Initiatives de Recherche aux Urgences, SFMU, French Society of Emergency Medicine, France
Corresponding author at: Service des Urgences, Hôpital Saint Antoine, Assistance Publique-Hôpitaux de Paris, 184 rue du Faubourg St-Antoine, 75012 Paris, France.
E-mail address: pierre-clement.thiebaud@aphp.fr.

Youri Yordanov
Emergency Department, Hôpital Saint-Antoine, Assistance Publique-Hôpitaux de Paris, Paris, France
Sorbonne Universités, Paris, France
INSERM U1153, Statistic and Epidemiologic Research Center Sorbonne Paris Cité (CRESS), METHODS Team, Hotel-Dieu Hospital, Paris, France

Jacques-Emmanuel Galimard
INSERM U1153, Statistic and Epidemiologic Research Center Sorbonne Paris Cité (CRESS), METHODS Team, Hotel-Dieu Hospital, Paris, France

Diane Naouri
Dominique Pateron
Emergency Department, Hôpital Saint-Antoine, Assistance Publique-Hôpitaux de Paris, Paris, France
Sorbonne Universités, Paris, France

Fabien Brigant
Emergency Department, Hôpital Saint-Antoine, Assistance Publique-Hôpitaux de Paris, Paris, France

Jennifer Truchot
Initiatives de Recherche aux Urgences, SFMU, French Society of Emergency Medicine, France
Emergency Department, Hôpital Lariboisière, Assistance Publique-Hôpitaux de Paris, Paris, France

Farès Moustafa
Initiatives de Recherche aux Urgences, SFMU, French Society of Emergency Medicine, France
Emergency Department, Hôpital Gabriel-Montpied, Clermont-Ferrand, France

The Initiatives de Recherche aux Urgences Group

24 July 2018

https://doi.org/10.1016/j.ajem.2018.08.053

References

[1] Strate LL. Lower GI bleeding: epidemiology and diagnosis. Gastroenterol Clin North Am 2005;34:643–64. https://doi.org/10.1016/j.gtc.2005.08.007.
[2] Lanas A, García-Rodríguez LA, Polo-Tomás M, Ponce M, Alonso-Abreu I, Perez-Aisa MA, et al. Time trends and impact of upper and lower gastrointestinal bleeding and perforation in clinical practice. Am J Gastroenterol 2009;104:1633–41. https://doi.org/10.1038/ajg.2009.164.
[3] Hreinsson JP, Gumundsson S, Kalaitzakis E, Björnsson ES. Lower gastrointestinal bleeding: incidence, etiology, and outcomes in a population-based setting. Eur J Gastroenterol Hepatol 2013;25:37–43. https://doi.org/10.1097/MEG.0b013e32835948e3.
[4] Gayer C, Chino A, Lucas C, Tokioka S, Yamasaki T, Edelman DA, et al. Acute lower gastrointestinal bleeding in 1,112 patients admitted to an urban emergency medical center. Surgery 2009;146:600–6 discussion 606-7 https://doi.org/10.1016/j.surg.2009.06.055.
[5] Whelan CT, Chen C, Kaboli P, Siddique J, Prochaska M, Meltzer DO. Upper versus lower gastrointestinal bleeding: a direct comparison of clinical presentation, outcomes, and resource utilization. J Hosp Med 2010;5:141–7. https://doi.org/10.1002/jhm.606.
[6] Arroja B, Cremers I, Ramos R, Cardoso C, Rego AC, Caldeira A, et al. Acute lower gastrointestinal bleeding management in Portugal: a multicentric prospective 1-year survey. Eur J Gastroenterol Hepatol 2011;23:317–22. https://doi.org/10.1097/MEG.0b013e328344ccb5.
[7] Thiebaud PC, Yordanov Y, Galimard JE, Raynal PA, Beaune S, Jacquin L, et al. Management of upper gastrointestinal bleeding in emergency departments, from bleeding symptoms to diagnosis: a prospective, multicenter, observational study. Scand J Trauma Resusc Emerg Med 2017;25:78. https://doi.org/10.1186/s13049-017-0425-6.
[8] Charpentier S, Beaune S, Joly LM, Khoury A, Duchateau FX, Briot R, et al. Management of chest pain in the French emergency healthcare system: the prospective observational EPIDOULTHO study. Eur J Emerg Med 2017. https://doi.org/10.1097/MEJ.0000000000000481.
[9] Chan FKL. Lower gastrointestinal bleeding: what have we learned from the past 3 decades? Clin Gastroenterol Hepatol 2015;13:495–7. https://doi.org/10.1016/j.cgh.2014.11.013.
[10] Cavallaro LG, Monica F, Germanà B, Marin R, Sturniolo GC, Saia M. Time trends and outcome of gastrointestinal bleeding in the Veneto region: a retrospective population based study from 2001 to 2010. Dig Liver Dis 2014;46:313–7. https://doi.org/10.1016/j.dld.2013.11.005.
[11] Nable JV, Graham AC. Gastrointestinal bleeding. Emerg Med Clin North Am 2016;34:309–25. https://doi.org/10.1016/j.emc.2015.12.001.
[12] Lanas Á, Carrera-Lasfuentes P, Arguedas Y, García S, Bujanda L, Calvet X, et al. Risk of upper and lower gastrointestinal bleeding in patients taking nonsteroidal anti-inflammatory drugs, antiplatelet agents, or anticoagulants. Clin Gastroenterol Hepatol 2015;13:906–12. https://doi.org/10.1016/j.cgh.2014.11.007.
[13] Oakland K, Guy R, Uberoi R, Hogg R, Mortensen N, Murphy MF, et al. Acute lower GI bleeding in the UK: patient characteristics, interventions and outcomes in the first nationwide audit. Gut 2018;67:654–62. https://doi.org/10.1136/gutjnl-2016-313428.
[14] Bour B, Pilette C, Lesgourgues B, Nouel O, Heluwaert F, Henrion J, et al. Hémorragies digestives basses aiguës: résultats préliminaires d'une étude de l'ANGH sur plus de 1000 malades. Endoscopy 2008;40:CO66. https://doi.org/10.1055/s-2008-1066902.
[15] Sengupta N, Tapper EB, Patwardhan VR, Ketwaroo GA, Thaker AM, Leffler DA, et al. Risk factors for adverse outcomes in patients hospitalized with lower gastrointestinal bleeding. Mayo Clin Proc 2015;90:1021–9. https://doi.org/10.1016/j.mayocp.2015.04.024.
[16] Lingenfelser T, Ell C. Lower intestinal bleeding. Best Pract Res Clin Gastroenterol 2001;15:135–53. https://doi.org/10.1053/bega.2000.0160.
[17] Aoki T, Nagata N, Niikura R, Shimbo T, Tanaka S, Sekine K, et al. Recurrence and mortality among patients hospitalized for acute lower gastrointestinal bleeding. Clin Gastroenterol Hepatol 2015;13:488–94. https://doi.org/10.1016/j.cgh.2014.06.023.
[18] Kwak MS, Cha JM, Han YJ, Yoon JY, Jeon JW, Shin HP, et al. The clinical outcomes of lower gastrointestinal bleeding are not better than those of upper gastrointestinal bleeding. J Korean Med Sci 2016;31:1611–6. https://doi.org/10.3346/jkms.2016.31.10.1611.
[19] Ríos A, Montoya MJ, Rodríguez JM, Serrano A, Molina J, Ramírez P, et al. Severe acute lower gastrointestinal bleeding: risk factors for morbidity and mortality. Langenbecks Arch Surg 2007;392:165–71. https://doi.org/10.1007/s00423-006-0117-6.
[20] Venkatesh PGK, Njei B, Sanaka MR, Navaneethan U. Risk of comorbidities and outcomes in patients with lower gastrointestinal bleeding - a nationwide study. Int J Colorectal Dis 2014;29:953–60. https://doi.org/10.1007/s00384-014-1915-x.
[21] Niikura R, Yasunaga H, Yamaji Y, Horiguchi H, Fushimi K, Yamada A, et al. Factors affecting in-hospital mortality in patients with lower gastrointestinal tract bleeding: a retrospective study using a national database in Japan. J Gastroenterol 2015;50:533–40. https://doi.org/10.1007/s00535-014-0994-3.
[22] Strate LL, Ayanian JZ, Kotler G, Syngal S. Risk factors for mortality in lower intestinal bleeding. Clin Gastroenterol Hepatol 2008;6:1004–10. https://doi.org/10.1016/j.cgh.2008.03.021.
[23] Carson JL, Grossman BJ, Kleinman S, Tinmouth AT, Marques MB, Fung MK, et al. Red blood cell transfusion: a clinical practice guideline from the AABB*. Ann Intern Med 2012;157:49–58. https://doi.org/10.7326/0003-4819-157-1-201206190-00429.
[24] Villanueva C, Colomo A, Bosch A, Concepción M, Hernandez-Gea V, Aracil C, et al. Transfusion strategies for acute upper gastrointestinal bleeding. N Engl J Med 2013;368:11–21. https://doi.org/10.1056/NEJMoa1211801.