Analysis of the factors influencing the outcome of bleeding of the lower digestive tract.

A report of 15 consecutives cases

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Analysis of the factors influencing the outcome of bleeding of the lower digestive tract. A report of 15 consecutives cases

The authors present a series of 15 patients with lower gastrointestinal bleeding. 11 (73%) out of 15 patients, were directly subjected to surgery, and 4 (37%) attempted to stop hemorrhage with angiography. In the group of patients undergoing surgery we had a mortality of 1 out of 12 (8%). In the group of patients undergoing embolization, two of four died with 50% of mortality. All patients undergoing surgery had received from a minimum of two to a maximum of four blood bags before surgery. 8 out of 12 patients (67%) received more than two bags. In 10 (67%) out of 15 patients TC scan preoperatively identified the site of bleeding. 10 cases out of 15 patients was evident Anticoagulant or antiplatelet use. In the group of patients undergoing surgical treatment with haemorrhage stopping 60% (6 out of 10) did not take these drugs. No patient had significant alterations to the INR value. Patients undergoing Surgical treatment without haemorrhage stopping had an average age significantly higher than the group with haemorrhage stopping (84 aa vs 54.2). In this group CT scan had identified the source of bleeding in one patient on two (50%) and all patients In the group of deceased patients, the average age was 78 aa, the tac had never identified the site of bleeding, and all had antiaggregates. In the group of deceased patients, the average age was 78 aa, CT scan had never identified the site of bleeding, and all In the group of deceased patients, the average age was 78 aa, the tac had never identified the site of bleeding, and all had antiaggregates

KEY WORDS: Lower gastrointestinal bleeding, Prognostic factors, Surgical management

Introduction

The surgical treatment of digestive hemorrhages still remains a challenge nowadays. The specialist team that manages the patient, in fact, must be able to decide whether the patient needs urgent surgery or he can be treated conservatively with the most modern methods. Although the improvement of conservative techniques has changed the approach to these pathologies in last years, the surgery remains the only procedure that can provide a definitive resolution of such pathologies, especially if the pre-surgery investigations were able to identify the place and the type of bleeding lesion. In this study, a consecutive series of 15 patients with digestive hemorrhage no longer susceptible to endoscopic treatment.

Patients and Methods

The medical records of patients who reported lower gastrointestinal bleeding and hospitalized at the Division (UOC) of General and Emergency Surgery of AORN

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"A. Cardarelli " in Naples, from 01/01/2017 to 08/31/2017, have been valued.
All reports of patients with secondary hemorrhage due to surgical treatment (bleeding from ileal or colonic anastomosis) or endoscopic procedures or trauma were excluded.
It has Been estimated how many patients were undergone surgery and how many had arteriography and if surgery was effective in determining the stopping of bleeding.
We have considered effective the surgical treatment when it resulted in the bleeding stopping followed by patient discharge or moving it to another department of our hospital. Surgical treatments were considered ineffective, which, having failed to cause bleeding stoppages, required re-intervention or subsequent non-surgical procedure, such as arteriography, or which, even when the bleeding was stopped, were followed by the death of the patient
We considered that the bleeding was stopped when the patient, in the postoperative period, showed progressive stabilization of laboratory and hemodynamic parameters without the need for blood transfusion.
It has been evaluated in how many cases the CT scan performed before the surgery allowed identification of the site and / or the pathology source of bleeding and whether the identification of the site or source of bleeding prior to the surgical approach can be considered a favorable prognostic factor. The confirmation of the site and the source of bleeding pathology was made by tracing between the reports of the preparatory TAC and the final result of histological examination.
Finally we estimated if and how many patients in these series assumed anticoagulant or antiplatelet drugs and if they presented, before the surgical procedure , changes in the value of the international normalized ratio (INR)

Results

During the considered period, 15 patients with low digestive hemorrhage were hospitalized. Of these, 9 (60%) were males and 6 (40%) were females. The median age was 62.8 years, ranging from 21 years to 89 years.
The 73% of patients (11 out of 15) were older than 60 years old with an average of 77 years. In patients whose the surgery was considered effective the mean age was significantly lower (54.2 years). On the patients whose the surgery was not effective and on the two undergoing embolization followed by death (four patients in total) the average age was 78.5 years old.
On the 15 patients examined, 11 (73%) were subjected to surgical intervention first, and on 4 of them (37%) it was attempted to stop hemorrhage with embolization. Of these least ones, three cases were successful in the embolization procedure and after 48 hours they were moved to different departments because of other pathologies; only in one case a colic necrosis has developed and the patient had to undergo surgical intervention.
So in total we considered 12 patients undergoing surgery. The surgery operation was successful and able to stop bleeding in 10 patients (83%): eight of them were dehospitalized to the home and two were transferred to a other department because their illnesses were not of surgical interest.
(17%), the intervention was not effective to stop the bleeding: in one case there was a death and in the other a reintervention was needed. In patients undergoing surgery, eight colic resections (three for diverticular pathology, two for malignant neoplasms, one for villous tubulus adenoma with severe dysplasia, one for colic angiodysplasia, and one for colic necrosis after embolization) were performed; three ileal resections (one for GIST, one for Meckel's diverticum and one for Crohn's disease). Finally, we had a case of misdiagnosed gastric ulcer, treated with direct suture of ulcer. (Table I).
Out of 15 patients, 4 were undergoing an arteriography with embolization: one of them developed a right colon necrosis and was subjected to surgery, two of them died within 12 hours after the arteriographic procedure, and another, after the phase acute, has been transferred to the medical area for further therapeutic treatment because he was affected by cardiovascular disease. In the two deceased patients after embolization, the report of the arterial examination reported the stopping of bleeding.
To evaluate the efficacy of the CT scan in identifying the site and the pathology leading to bleeding, we compared the results of this examination with the results of histological examinations and the descriptions of operator reports. CT scan identified the site of bleeding in 10 out of 15 patients (67%). However, it was able to identify the pathology of bleeding in only three cases (20%) of 15 (total case histories).
In patients undergoing surgery, the CT scan identified the site of bleeding in seven cases of twelve patients (57%) with the identification of the pathology leading to bleeding in only three cases (on the previous seven).
In the effective intervention group, CT scan has identified the site of bleeding in most cases: in six patients (60%) out of ten but identified the cause of haemorrhage in only two cases (20%). In four patients, however, the diagnosis of site and pathology was postponed to exploratory laparotomy: however, in only two cases it was possible to recognize the site of bleeding: in a Meckel diverticulum and in a right colon cancer.
In the other two cases, however, the source remained unknown and total colectomy was required. Histologic exam has shown in these cases the presence of vascular dysplasia angioedema.
For patients whose intervention failed to stop bleeding, in one case TC identified the site of hemorrhage but not the underlying condition, in another case it was unable to recognize neither the site neither the pathology. The

TABLES I - *Summary of pathologies and surgical procedures*

Nr Pz	Name	Age	Sex	Surgical treatment with Bleeding Stopping	Haemorrage Site Identification By Tac	Surgical Techinique	Disease
1	B.R.	36	F	Yes	Yes	Small Bowel Resection	Small Bowel Gastrointestinal Stromal Tumor
2	C.V.	71	M	Yes	Yes	Right Colectomy	Colic Necrosis After Angiography
4	C.A.	71	M	Yes	Yes	Right Colectomy	Right Colonic Adenomas
5	D.F.A	82	F	Yes	Yes	Left Colectomy	Left Colon Diverticular Disease
6	D.M.A	23	M	Yes	Yes	Small Bowel Resection	Crohn Ileum
7	D.N.M.	79	F	No	Yes	Left Colectomy	Sigmoid Neoplasm
8	F.C.	16	M	Yes	No	Small Bowel Resection	Meckel Diverticulum
9	F.C.	23	F	Yes	No	Right Colectomy	Right Colon Neoplasm
10	G.R.	80	M	Yes	Yes	Right Colectomy	Right Colon Diverticular Disease
11	G.I	89	F	No	No	Direct Haemostasis Of Gastric Ulcer	Gastric Ulcer
14	S.G.	71	M	Yes	No	Sub Total Colectomy Withileocolostomy	Colon Diverticular Disease
15	B.L.	69	M	Yes	No	Sub Total Colectomy Withileocolostomy	Angiodysplasia

TABLES II - Prognostic factors

	Surgical treatment with haemorrage stopping (tot pz 10)	Surgical treatment without haemorrage stopping (tot pz 2)	Death (tot pz 3)
Median age	54.2	84	78
Haemorrage site identification by TAC	60%	50%	Not any
Anticoagulant or antiplatelet drugs use	40%	100%	100%
INR parameter alteration	No	No	No

colonoscopic examination was performed in 9 out of 15 patients. In one case it was diagnostic but not operational by identifying the source of the lesion. In eight cases, the presence of blood residues prevented colonoscopic examination from being performed. Six patients were judged not eligible for endoscopic examination.

All patients needed concentrate emesis infusion before being subjected to surgical procedure or embolization. In particular, patients undergoing surgery have received from a minimum of two to a maximum of four blood sachets. 8 out of 12 patients (67%) received more than two sachets (in particular, seven patients received four haemorrhage sachets before surgery).

Out of 15 patients, in 10 cases the anamnesis has reported the taking of anticoagulants for concomitant cardiovascular disease. However, no patient had significant changes in INR. There were no significant changes in the reference range (v.min 0.80 - v.max 1.20) considered by our laboratory. The minimum measured value was in fact 0.92 and the highest at 1.36. In patients who where undergoined to a surgery considered effective, 6 out of 10 (60%) did not take these drugs. On the other hand, both the two patients in whom the procedure was considered ineffective both for the two deceased after embolization, it was demonstrated the taking of antiaggregants or anticoagulants.

Altogether, 3 out of 15 patients died: one undergoing surgery and two to embolization, with a total mortality of 20%. In the group of patients undergoing surgery we had a mortality of 1 out of 12 (8%). In the group of patients undergoing embolization, two out of four died with 50% mortality.

Ultimately, in our series, unfavorable prognostic factors were the mean age, the lack of identification of the site of bleeding by the CT scan before intervention and the intake of anti – aggregates.

Regarding patients undergoing surgery, those of the ineffective group had an average age significantly higher than the ones into the group considered effective 84 y.o. vs 54.2 y.o.: CT scan had identified the source of bleeding in one patient on two (50%) and all of them had anti-agglomerates. In the group of patients who died (three in total), the average age was 78 y.o., the CT scan had never identified the site of bleeding, and all of the patients had antiaggregates. (Table II)

Discussion

The management of acute digestive hemorrhages requires the use of important instrumental resources and a dedicated multi-disciplinary team. In recent years, non-oper-

ative, endoscopic and radiological procedures have become increasingly important in the management of this clinical condition. There are articles in the literature [1] and international guidelines [2] which present well established management schemes and the therapeutic diagnostic pathway to be used for the management of these patients.

Our emergency surgery division is part of the emergency department where there is a gastroenterology division with the possibility of performing endoscopic examinations h24/7.

In the same department there is a division of diagnostic radiology, one of interventional radiology and operating room, all of them active h24/7. All the patients in this study were received by our division from the gastroenterology department, when, according to these specialists, patients were no longer susceptible to endoscopic treatment. According to international literature, once they have come to our attention, these patients are evaluated and, in the presence of unstable hemodynamic conditions [1,2] or need for repeated emotional transfusion, [3] are subjected to surgery (in our series they were 11 out of 15). Otherwise, we usually try a conservative approach through interventionist radiology.

At the time of intervention, the primary problem is the correct identification of the source of bleeding [4]in order to reduce the morbidity and mortality rate reported in the literature. Bender [5] reports a total of 49 total colectomy performed under emergency / urgency or emergency relief for low digestive hemorrhage. Overall mortality was 27% (13 out of 49 patients).

In the group of patients undergoing elective / emergency intervention, mortality was 14% (1 in 7 out of 7). In patients undergoing emergency interventions in two cases a total colectomy with ileostomy with 100% mortality was performed and in the remaining 33 patients a colonoscopy with colonic anastomosis colo with 33% mortality (10 out of 33). Likewise, Setya reported a 33% mortality (4 cases out of twelve) in a case study of twelve patients undergoing subtotal colonic resection for digestive hemorrhage in which preoperative investigations had not identified the site of bleeding.

In our experience, the principal exam to identify the site and the source of bleeding was the CT angiogram. In fact, it identified the site of bleeding on 67% of cases (10 out of 15 patients). In the group of patients undergoing surgery, CT scan identified the site of bleeding in 58% of cases (7 out of 12) and, especially in the intervention group considered effective, the CT scan identified the site of bleeding in most cases: six out of ten patients (60%) allowing the execution of targeted surgical technique.

It is not difficult to find in the literature studies confirming our experience. For example, in the meta analysis of Lian-Ming Wu [7] it is evident that CT angiogram, as well as often allowing site identification and the pathology cause of hemorrhage, is considered a little invasive, easily repeatable examination which has been shown to have a higher sensitivity to other investigations in identifying the bleeding site. It is already sensitive to bleeding of 0.3 ml/min against, for example, the 0.5 ml/min that is needed for angiography to identify the source of bleeding. The limits of this method are related to availability, lack of therapeutic options vs. colonoscopy or angiography and possible presence of allergic reactions to the contrast medium.

Another non-invasive method that can play an important role in identifying the source of bleeding is arteriography. In the Browder study [8], 50 patients with lower digestive hemorrhage were subjected to angiography. After angiography about 57% of patients had re-bleeding. In these patients who subsequently underwent surgery and in which angiography had allowed the bleeding site to be identified, overall morbidity had been 8.6% versus patients in whom the site had not been identified, equal to to 37%.

Ker-Kan Tan's study [9] highlights the importance of instrumental examinations in the location of the preoperative bleeding source. In this study, 27 patients underwent arteriography with super-selective embolization within 24 hours of the onset of bleeding. More than half were in therapy with antiaggregates or anticoagulants and five even had a double aggregation. Arteriography has allowed the identification of the bleeding site in eleven cases in the right colon, ten in the left and six in the small intestine. When the hemorrhagic source can not be identified preoperatively there is no other solution than a systematic and meticulous examination of the viscera during the surgery. In structures such as ours available, intraoperative enteroscopy can be a useful aid in identifying the type and location of the lesion during surgery. During surgery, it is useful not only in the direct identification of the source of bleeding, but also in the exclusion of the hemorrhagic source being pertinent to an intestinal part.

According to Bonnet's work [10] this technique allows the full intra-operative intra-operative study of the small intestine between 57% and 100% of the cases and allows the identification of the source of bleeding in 80% of the cases. In an old Bowden report [11] 30 patients underwent intraoperative enteroscopy for different causes. Of these, 18 patients (60%) were affected by digestive bleeding with headaches and unknown cause. The intraoperative examination was able to identify the type and location of the lesion in sixteen eighteen patients. The two patients who could not identify the cause of bleeding had, in one case, massive bleeding and other tense visceral adherence that made it impossible to complete the examination.

Conclusions

The diagnosis and treatment of digestive hemorrhages remains a challenge today for doctors who are in charge

of managing these patients. Identifying the source of bleeding can be difficult even in the presence of resources because in many patients the bleeding may be intermittent or stop spontaneously. Doctors who handle these patients should be familiar with the different possibilities of diagnosis and therapy and with their disadvantages and benefits so that they can be used in the most appropriate way. Surgery, although increasingly used as last resource, is, at the same time, the only procedure capable of providing a definitive resolution of such pathologies, especially if preoperative investigations were unable to identify the site and the type of bloody lesion.

Riassunto

Gli autori presentano una serie di 15 pazienti affetti da emorragia digestiva. Su 15 pazienti, 11 (73%) sono stati sottoposti in prima istanza ad intervento chirurgico, e 4 (37%) a tentativo di arresto dell' emorragia con procedura di embolizzazione. Nel gruppo pazienti sottoposti ad intervento chirurgico abbiamo avuto una mortalità di un 1 su 12 (8%). Nel gruppo dei pazienti sottoposti a tentativo di embolizzazione sono deceduti due su quattro con una mortalità del 50%.
Tutti i pazienti sottoposti ad intervento chirurgico hanno ricevuto da un minimo di due ad un massimo di quattro unità di sangue prima dell' intervento. 8 pazienti su 12 (il 67%) hanno ricevuto un numero di sacche superiore a due.
La TAC ha identificato preoperatoriamente la sede del sanguinamento in 10 pazienti su 15 (67%).
Su 15 pazienti, in 10 casi l'anamnesi ha evidenziato l'assunzione di antiagreganti. Nel gruppo dei pazienti sottoposti ad intervento considerato efficace ben il 60% (6 su 10) non assumevano tali farmaci. Nessun paziente presentava alterazioni significative dell'INR.
I pazienti sottoposti ad intervento chirurgico considerato inefficace presentavano un età media significativamente superiore rispetto al gruppo considerato efficace 84 aa vs 54.2: la TAC aveva identificato la fonte del sanguinamento in un solo paziente su due (50%) e tutti assumevano antiaggreganti. Nel gruppo dei pazienti deceduti, l'età media era pari a 78 aa, la TAC non aveva identificato in nessun caso la sede del sanguinamento, e tutti assumevano antiaggreganti

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