Abstract- AIM: to present a systematized management results, to asses the use of a vacuum system in local treatment and to determine factors influencing the outcome of enterocutaneous (ECF) fistulas. DESIGN: Retrospective, descriptive, observational. METHODS: All patients with postoperative ECF from March 1998 to March 2011 were registered. A management protocol by stages was applied. Demographic aspects, fistula's characteristics and conservative treatment modality were evaluated. Variables were faced with the mortality event using program SPSS version 18. Categorical variables were analyzed using the chi-square or Fisher's exact test when suitable. RESULTS: This study included 125 patients. Fourteen (11.2%) were initially operated, 56 (51.4%) had spontaneous fistula closure only with conservative treatment, whereas 49 patients (44.1%) required reconstructive surgery. Six patients (4.8%) underwent fistula's recurrence and 12 (9.6%) died. Sepsis (p=0.002), multiple fistulas (p=0.024) and abdominal wall defect (p=0.022) were predicting statistically significant mortality factors. CONCLUSIONS: A systematized management of ECF allows to optimizing treatment results. Vacuum therapy was highly effective in output control and provided spontaneous healing in many cases. Sepsis, multiple lesions and abdominal wall defect were negatives prognoses factors.
Variables were faced with the mortality event using program SPSS version 18. Categorical variables were analyzed using the chi-square or Fisher's exact test when suitable. Binary logistic regression was carried out by multivariate analysis of categorical risk factors.

Results

The series was integrated by 125 patients with 185 postoperative enterocutaneous fistulas (x = 1.4 per patient), of which 103 (82.4%) were referred from other care facilities. Altogether, eighty-seven patients (69.6%) were men with a mean age of 51 years (range: 14-86 years). Median of abdominal surgeries prior fistula appearance was 2 (range 1 to 10). Seventy-six cases initially presented sepsis (60.8%) whereas 91 (72.8%) hypoaalbuminemia. Most frequent primary pathologies were colorectal neoplasia, diverticulitis, abdominal trauma, appendicitis and hernia, of which 62 (49.6%) of these were surgical emergencies. The direct causes were suture line or intestinal Anastomosis disruption in 56 patients (44.8%); surgical injury in 32 (25.6%); in 27 patients (21.6%) the small intestine lied in contact with a prosthetic mesh; and in remaining 10 the etiology were not identified. Location was jejunooileal in 87 cases (69.6%), gastroduodenal in 23 (18.4%) and colorectal in 15 (12%). Forty-five patients (36%) presented more than one orifice, superficial fistulas 89 (71.2%), high output 95 (76%) and 65 (52%) had major abdominal wall defect.

Fourteen out of 125 fistulized patients were initially operated, 4 of them electively, while surgery for peritonitis was indicated in the remaining 10. Ostomy was performed to 4 of them, leaving definitive reconstruction for further surgery. Mortality in this group was 7.1% (1 case). One hundred and eleven patients (88.8%) received conservative treatment. Forty-six patients presented sepsis during conservative treatment, mainly due to catheter contamination and respiratory disease. Nine of them, with abdominal collections, were treated by percutaneous drainage, 2 of which were completed by directed laparotomy. TPN was indicated throughout treatment to 6 patients for a median 75 days (range 36 to 92 days), 49 patients received PN combined with EN; and 56 others were fed only enterally. 4 of them by fistuloclysis. After reaching stability, 32 patients continued treatment at home. Regarding local lesion management, 92 cases (82.9%) were treated only with SIVACO, 5 with SIVACO + octreotide, and 4 with octreotide + local aspiration. Collection bag or simple dressing were indicated in the remaining 10 cases with low output fistulas. Output control was obtained in 109 cases (98.2%) from an initial median of 900 mL/d to 50 mL/d 72 hours later, representing a fall of 94.5%. Fifty-six patients (51.4%) healed with conservative treatment only between 2 and 24 weeks (median 5 weeks). During this period 6 patients died (5.4%), 5 from sepsis and 1 from stroke. Lastly, 49 patients (44.1%) required surgery after a median of 4 months (range 1 to 36 months) with the following results: healed 43 (87.7%), recurrence 6 (12.2%), chronic fistula 2 (4.8%) and 5 deaths (12.1%), 3 from sepsis and 2 from coagulopathy. Global healing was possible in 111 patients of the series (88.8%), whereas 12 (9.6%) died. Sepsis (p = 0.02), multiple lesions (p = 0.024), and abdominal wall defect (p = 0.022) proved statistically significant predictors of mortality in univariate analysis. Logistic regression test did not show meaningful results in any variable probably due to the low number of events (deaths) recorded in the sample.

Discussion

In the early 60's, Chapman et al. proposed management of the ECF sequentially in 4 stages, acting primarily on the mortality factors and delaying surgical repair until clinical and nutritional recovery [1]. This proposal was the basis of modern approach of this pathology. Years later, several protocols were suggested; they underwent some modifications to update ECF management. [3] - [4]. When we began our experience, we observed that, in said protocols, the aims to be achieved were mixed in different stages, some terms were not clearly defined and mainly, they did not represent faithfully our current conduct. As a result, without departing from Chapman et al.'s principles, we also staged a protocol, applying diagnostic and therapeutic resources alternately [5]. After 14 years of use, this protocol has proved it a practical resource to guide patient management. While it is true that these patients require frequent decision-taking during treatment, surgery as initial indication is a major issue. The results of these series, consistent with other studies [6] [7], support this procedure in patients with acute abdomen and those who, maintaining a good general condition, developed early fistulas. Controlling the main mortality factors is a priority for the remaining patients to be treated conservatively. Sepsis treatment and hidroelectrolite balance restoration do not differ substantially from that applied in the routine management of critically ill patients so that it will not be analyzed in this presentation. The importance of nutritional support for successful treatment in a coordinated way, using parenteral and enteral route, either by naso-jejunal tube, jejunoileostomy or fistuloclysis, is clear. The advantages of enteral over parenteral nutrition (PN) as regards physiological aspects, less morbidity, and cost reduction are widely known [8] - [9] However in complex cases, PN is difficult to avoid. Vickers et al. [7] strongly indicate TPN throughout treatment when spontaneous closure is expected. Nevertheless, it has not been shown that gastrointestinal secretion and volume overload reduction on the fistula increases the possibility of spontaneous closure [10]. Both EN and PN are resources that the specialist team should handle so as to indicate them, either in combination or alternatively, according to the case nature. Our approach, especially in high output fistulas, begins with fasting and TPN. Then, after controlling intestinal effluent, the parenteral route is gradually replaced by the enteral one, if it is well tolerated and does not complicate wound management. Controlling fistula's output is one of the requirements to reverse catabolism and, eventually, to achieve spontaneous closure. New methods have been proposed in order to block intestinal flow: biological adhesives, porcine intestinal submucosa cylinders, fast-hardening aminoacid solutions, acrylates, and others [11] - [12] - [13]. Although some, at first, showed encouraging results, they have failed to prove their full effectiveness as most of the published series make reference to a few patients, usually of deep and low...
output fistulas, which generally heal whichever conservative treatment. Octreotide, a synthetic somatostatin analogue, is a powerful inhibitor of gastrointestinal biliary and pancreatic secretions. Its use has become widespread and is the drug of choice when treating ECF since the last two decades so far [14] - [15]. In recent years, enthusiasm has waned because it could be seen that, while it is effective to reduce enteric output, it has not been possible to demonstrate a rise in percentage of spontaneous closure or a fall in mortality rate. In the experience of the authors, it has been a valuable resource in cases of high-output fistulas of gastric, duodenal and jejunal origins, when vacuum proved inconvenient, or as reinforcement of the latter if output reduction was not satisfactory. SIVACO, developed in the mid-'80s by Fernandez et al. [16] has been the main reason because it has proved the most effective method to reduce intestinal effluent, with down output 85 to 95% within a few hours after treatment [2] - [16].

CONCLUSIONS

The application of a systematized approach is helpful in guiding fistulized patient management. Initial surgery is a valid option in patients maintaining a good general condition and is necessary in cases where the fistula coexists with an acute abdomen. SIVACO is highly effective in controlling fistula’s output and healing in a variable percentage of cases. Conservative treatment should be extended several weeks, if necessary, to detect a halting in the wound healing process. Sepsis, multiple lesions and those located in open abdomen have proven negative factors in this study. However, it is possible that many other factors should be considered when evaluating a fistulized patient. SIVACO showed healing without surgery in a large percentage of cases, especially in those who initially operated, allows patients to optimize the clinical and nutritional condition to face surgical treatment in a timely manner. Once the stabilization phase is reached, it is feasible to continue treatment at home which, together with reduced use of PN, infusions, dressings and reduced length of stay, suggests a significant cost reduction. Teams who have been working with SIVACO have achieved significant results in some cases, but this has been at the price of a high complication rate.

References


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