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The abdominal wall incisional hernia repair in cirrhotic patients

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SUMMARY: **The abdominal wall incisional hernia repair in cirrhotic patients.**

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Background. *The incidence of abdominal wall hernia in cirrhotic patients with ascites is between 20 and 40%. Controversies regarding the treatment modality and surgical timing of abdominal wall incisional hernia repair in cirrhotic patients remain. The study proposed wants to analyze the abdominal incisional hernia repair in cirrhotic patients with ascites performed in a single center to determine post-operative morbidity, mortality and complication rate.*

Patients and methods. *Cirrhotic patients with abdominal incisional hernia that underwent surgical operation for abdominal wall hernia repair at the "Policlinico Paolo Giaccone" at Palermo University Hospital between January 2015 and December 2016 were identified and the data collected were retrospectively reviewed; patients' medical and surgical records were collected from charts and the surgical and ICU registries. The degree of hepatic dysfunction was classified using Child-Pugh classification. Post-operative mortality was considered up to 30-days after surgery. A follow-up period of 6 months at least was performed to evaluate hernia recurrence and complications.*

Results. *Mortality rate is of 18.5% (p 0.002). Recurrence rate (p 0.004) and seroma formation rate (p 0.001) are most frequent in urgency group. The elevated ASA score and the prediction of a complicated post-operative course is higher in urgency group (p 0.004) as higher is the in-hospital stay (p 0.001) and the ICU stay (p 0.001).*

Conclusions. *Elective surgery for abdominal wall hernia repair in cirrhotic patients seems to be successful and associated with lower mortality/morbidity rate and recurrence rate than urgency.*

KEY WORDS: Abdominal wall incisional hernia - Cirrhotic patients.

Introduction

The incidence of abdominal wall hernia in cirrhotic patients with ascites is between 20 and 40%. The ideal surgical management is still a challenge for the relevant recurrence, morbidity and mortality rate due to post-operative complications (1). Traditionally, the surgical treatment of abdominal wall hernia in these patients was avoided because of a significant recurrence rate and postoperative morbidity/ mortality. Also the "watch and wait" strategy is related to high mortality rate due to the necessity of operating in urgency when complications occur such as incarceration or sac rupture (2). Thus, controversies regarding the treatment modality and timing of abdominal wall hernia repair in cirrhotic patients remain (3). Concerning the abdominal incisional hernia in cirrhotic patients, there is a lack of high-level randomized controlled studies that could give the basis of treatment protocols. However, recent data have demonstrated the usefulness of an early elective surgery in a setting of controlled liver cirrhosis, reducing ascites volume and equilibrating serological parameters such as albumin level, electrolytes and coagulation pattern (4). An increasing number of reports are recommending early elective surgery in abdominal wall hernia patients with liver cirrhosis reducing post-operative complications with the improvement of perioperative patient care (3). The study proposed wants to analyze the abdominal incisional hernia repair in cirrhotic patients with ascites performed in a single center to determine post-operative morbidity, mortality and complication rate.

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Patients and methods

Cirrhotic patients with abdominal incisional hernia who underwent surgical operation for abdominal wall hernia repair at the "Policlinico Paolo Giaccone" at Palermo University Hospital between January 2015 and December 2016 were identified and the data collected were retrospectively reviewed; patients' medical and surgical records were collected from charts and the surgical and ICU registries.

The diagnosis of incisional hernia was obtained after physical examination and US/CT-scan execution. Cirrhosis was documented by anamnestic data. The degree of hepatic dysfunction was classified using Child-Pugh classification. Post-operative mortality was considered up to 30-days after surgery. A follow-up period of 6 months at least was performed to evaluate hernia recurrence, diagnosed with physical examination and US/CT scan. The refractory ascites was drained with paracentesis; albumin, serum electrolytes and coagulation disorders were corrected pre- and post-operatively when indicated. Mesh repair technique was adopted with inlay positioning of polyester mesh. Surgical operations were performed in laparotomy regimen. Patient characteristics are shown in Table 1.

Statistical analyses

Data were analysed in Excel 2013 and IBM SPSS software, version 21. The median was obtained for continuous variables. Comparison of continuous variables was made using Student's t-test or Mann-Whitney test, where appropriate. Comparison of categorical variables was made with the chi-squared (χ^2) test or Fisher's exact test. The statistical significance level was set to p-value < 0.05.

Results

Between January 2015 and December 2016, 27 cirrhotic patients were identified as receiving abdominal wall hernia repair for incisional hernia. The 27 patients selected who underwent surgery were aged between 57 and 81 years, and the mean age of the patients was 61 years. Twelve patients were males, and fifteen were females. Mean BMI was 25. Nine patients were classified as Child's class A, eight as Child's class B, and ten as Child's class C. Ten patients underwent emergency surgery. Urgent criteria were perforation (n=2), incarceration (n=5), strangulation (n=2) and skin ulceration (n=1).

TABLE 1 - CHARACTERISTICS OF THE POPULATION.

Variables	Population (n=27)	Election surgery (n=17)	Urgency surgery (n=10)	p value
Age (yrs)	61 (57-81)	61 (57-81)	64 (60-80)	n.s.
Male	12 (44%)	9 (53%)	3 (30%)	n.s.
Mean BMI	25	26	24	n.s.
Child-Pugh score:				
A (n of patients)	9	8	1	
B (n of patients)	8	6	2	
C (n of patients)	10	3	7	0.003
Mean in-hospital stay (days)	10	7	16	0.001
Mean ICU stay (days)	7	2	10	0.001
Death	5 (18.5%)	1	4	0.002
Recurrence	3 (11%)	1	2	0.004
Seroma	13	6	7	0.001
ASA score <3	7 (26%)	5	2	
ASA score ≥3	20 (74%)	12	8	0.004

Death occurred in five patients and four after urgent surgical operation; the causes of death were MOF due to sepsis (n=3) and major ascites (n=1). Otherwise, in elective group death occurred after post-operative heart-stroke (n=1).

Recurrence rate observed was of 11% (n=3), one after elective surgery and two after urgency surgery. Seroma formation was observed in thirteen patients: six after elective surgery and seven after urgency surgery. In both group it was treated conservatively.

The ASA score variable was divided into two groups: ASA < 3 and ASA ≥ 3. 26% (n=7) of patients were classified as ASA < 3 and 74% (n=20) ASA ≥ 3. The difference between the two groups of patients, treated in urgency and in elective surgery, was significant (p 0.004).

Discussion and conclusions

In cirrhotic patients, the most important contributors in the development of the hernias are the weakness of the fascia and of the abdominal muscles due to malnutrition and enlargement of pre-existing opening in the fascia promoted by increasing of abdominal pressure as the result of the ascites formation (3).

In 1960, in a study conducted with 16 patients, Baron reported a mortality rate of 31% after umbilical hernia repairs (5). O'Hara et al. reported a morbidity rate of 22% and a mortality of 16% in urgency. The complications related to surgery of abdominal wall hernias are high in cirrhotic patients (6).

In the past, the surgical treatment was avoided in many cases because of the risk of complications related to the surgery and high recurrence rate. The "watch and wait" strategy was applied performing the surgical operation only when complications occurred. The recent data have demonstrated that the early elective surgery is recommended to prevent complications after emergency surgery indicating much lower morbidity and mortality rates than urgency treatment (4).

This happens because of the improvements in perioperative patient care and recent developments in surgical techniques (7-34).

Elective surgery seems to be successful and associated with lower mortality rate. Scientific reports indicate that an adequate preparation of cirrhotic patients, with control of ascites, albumin - electrolytes serum levels and coagulation pattern, and nutritional support, allows the success of elective surgery (1).

In the current study, mortality rate is 18.5% with a significant p-value between the urgent and the elective group (p 0.002).

Also the differences about the post-operative complications are significant between the two groups; as a matter of fact recurrence rate (p 0.004) and seroma formation rate (p 0.001) are higher in urgency group. The elevated ASA score and the prediction of a complicated post-operative course is higher in urgency group (p 0.004) as higher is the in-hospital stay (p 0.001) and the ICU stay (p 0.001).

In addition, according to data reported by Belghiti and Durand, the incidence rate of complications and the mortality rate increase dramatically in patients with Child's class C compared to those with class A disease (2).

The results of the data proposed show the risk related to the ancient idea of "watch and wait" strategy in managing the cirrhotic patients with abdominal incisional hernia. The surgical operation performed in urgency or when complications occur is related to higher post-operative morbidity and mortality rate, higher in-hospital and ICU stay, and higher post operative complications rate such as recurrence or seroma formation. According to recent published data, pre-operative refractory ascites should be managed with paracentesis, albumin and electrolytes serum level should be pre- and post-operatively balanced such as coagulation disorders. The scientific database lacks of data and randomized trials about the specific topic treated and it should give innovative and specific indications about the management of the abdominal wall incisional hernia in cirrhotic patients, with precise recommendations about the correct surgical timing, creating a prognostic score for pre- and post-operative evaluation.

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