POSSIBLE APPLICATION OF SURGICAL TREATMENT OF CHAGASIC MEGACOLON AT SANTA CRUZ GENERAL HOSPITAL, BOLIVIA

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Abstract: Chagas' disease, a chronic parasitic disease caused by the protozoan Trypanosoma cruzi, is one of the endemic diseases in Central and South America. In Bolivia its seroprevalence is very high and the most common digestive manifestation of chronic Chagas' disease is megacolon.

A new protocol for the surgical treatment of Chagasic megacolon has been started in Santa Cruz General Hospital. It consists of a peri-operative management, a choice of operative technique and a long term follow-up.

From July 1989 to August 1992, among 46 Chagasic seropositive megacolons, 37 definitive operations of colorectal resection and anastomosis were performed. Although five cases developed early postoperative complications, there were no deaths in the group which had definitive operations.

The purpose of this study is to establish a standard surgical management for Chagasic megacolon in Bolivia.

INTRODUCTION

Chagas' disease, a chronic parasitic disease caused by the protozoan Trypanosoma cruzi, is a disease endemic to all Central and South American countries. It is estimated that about 16 million people are infected (WHO, 1990; UNDP/WORLD BANK/WHO, 1991).

In Bolivia, Chagas' disease is a serious public health problem because its vector (Triatoma) is found in 83% of the national territory. The seroprevalence of Chagas' disease is very high (29.8%-70%) (Foianini, 1986).

There are three stages in Chagas' disease: acute, indeterminate and chronic (WHO Expert Committee for Chagas Disease, 1991). After the short acute stage in which the symptoms can be very mild and atypical, a long asymptomatic phase may last several years. In this stage, up to 30% of people will suffer damage to their cardiac, digestive or neurological systems. In Bolivia, the most common digestive manifestation of the chronic Chagas' disease is megacolon.

Many authors have reported on the surgical treatment of Chagasic megacolon (Joffre and Moreira, 1988; Milton, 1985; Moreira et al., 1988). However because there is a great difference as for economic situations and level of medical care among South American countries, it is difficult to directly apply these results to Bolivian cases.

Santa Cruz is the second largest city in Bolivia, located in the eastern tropical area where Chagas' disease is also endemic. Currently many people immigrate from the high Andian area to Santa Cruz that the prevalence of Chagas' disease is getting higher.

In Santa Cruz General Hospital (SCGH), a new protocol for the surgical treatment of Chagasic megacolon had started. It consists of a pre- and post-operative management, a choice of operative procedure and a long term (at least five years) follow-up.

The purpose of this program is to establish a standard surgical management for Chagasic megacolon in Bolivia.

This report is a preliminary evaluation of the new protocol.

MATERIALS AND METHODS

Figure 1 shows the algorithm for the management of Chagasic megacolon.

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All cases diagnosed as megacolon in the Department of Surgery at SCGH were examined by serological Chagasic tests. The IHA (Indirect hemagglutination test) was performed first. When the IHA was negative, the IFA (Immunofluorescent assay) was examined. All seropositive cases with the IHA or the IFA were included as Chagasic megacolon cases in this protocol. These Chagasic megacolon cases were categorized into three types by clinical forms; Fecaloma type, Volvulus type and Other type. (Fecaloma is a fecal mass impacted by prolonged retention of feces.)

Diagnosis of fecaloma could be made by the history of a long period without defecation and palpable feces with rectal digital examination. Volvulus was characterized by a sudden onset of severe abdominal pain and usually found no palpable feces in rectum.

Each type has its own protocol consisting of preoperative preparation, surgical treatment and postoperative management (Figure 2).

For example, in the case of fecaloma, a continuous enema is the first choice, then a manual extraction. If the preparation is still not completed, first a colostomy (usually Hartmann's operation) is made. When the patient is suspected volvulus, the urgent rectosigmoidoscopy has to be performed. If the necrosis of the colonic mucosa is found, an emergent Hartmann's operation is indicated. If its mucosa was intact, devoulvement with a rectosigmoidoscope or a rectal tube has been the first choice.

All patients with hypoalbuminemia had their serum albumin levels corrected up to 3.5 mg/dl. Only the case with normal serum albumin levels (over 3.5 mg/dl) has to indicate the definitive operation of resection and anastomosis.

All operations listed above were performed by Bolivian surgeons. Colorectal anastomosis was done with manual sutures usually, while some of cases required mechanical suture devices (EEA stapler).

RESULTS

From July 1989 to August 1992, 61 clinical megacolon cases were admitted to the Department of Surgery of SCGH. 46 were seropositive for Chagasic test. These 46 cases included the following studies.

As it is shown Figure 3, the mean age of Chagasic megacolon patients was 52.7 years old and 31 were male. There were 25, 16 and 5 case of Fecaloma type, Volvulus type and Other type, respectively (Figure 4).

Associated problems were cardiomyopathy in 9 cases (24%), pulmonary tuberculosis in 2 cases (5%).
Preoperative serum albumin level is shown in Figure 5. Twenty-four cases (65%) were under 3.5 mg/dl.

Among 46 Chagasic megacolon cases, seven received only non-surgical management. Although 6 of them were resolved non-surgically, they refused further definitive operation. The other case died of severe dehydration and acidosis before operation.

Surgical treatment was performed in 39 cases. Definitive operation of colorectal resection and anastomosis was done in 37 of them. In 2 cases only Hartmann's operation was performed due to refusal to the definitive operation.

Of the 37 definitive operations, one stage (direct) anastomosis was done in 28 cases and two stages (delayed) anastomosis was done in 9 other cases (Figure 6).

The distance of the colorectal anastomosis from the anal verge is shown in Figure 7. The largest were between 5 to 10 cm. In three cases with very low anastomosis (less than 5 cm) mechanical suture devices (EEA stapler) were used.

Five cases had developed early post-operative com-
Complications. Stercoraceous fistulas were developed in only 3 cases (8.1%) (Table 2).

The mean length of hospitalization was 34.5 days (Figure 8).

There were no deaths in the group which underwent definitive operation. Of the two cases which died: one was in the group of Hartmann's operation only and the other was in non surgical group (Table 3). The mortality rate of total Chagasic megacolon was 4.3% (2/46), but that of the definitive operation group was 0% (0/37).

**DISCUSSION**

Because of the difference of the economic status and level of medical care among developing countries, the application of a surgical treatment established in one country may not be appropriate for another country.

Many studies about the surgical treatment of Chagasic megacolon have been reported, but there are very few from Bolivia (Saucedo, 1988). The prospective study of Chagasic megacolon was the first trial in Bolivia.

Usually the surgical treatment of Chagasic megacolon was only a colostomy for the fecaloma or a laparotomy for the devolvation of volvulus. In rural areas this is true even now where no specialist is available.

The seroprevalence of Chagas' disease is very high where some authors report it is over 70% in several areas (Foianini, 1986). Therefore, chronic Chagas' disease is becoming one of the most serious and common public health problems in Bolivia where the megacolon is more often encountered than the megaesophagus.

In such circumstance, the surgical management for Chagasic megacolon is indispensable for public health. The protocol, developed by Bolivian doctors, is intended to establish a standard surgical management for Chagasic megacolon in Bolivia.

Below are some points to be noted for information.

1) **Operative technique**

   An operative technique should be determined by the physiopathology of the disease. Chagasic megacolon originates in the aganglionic portion of the intestine and a decreased number of ganglion cells are found throughout the colon (Earman, 1972; Todd et al., 1969). From the point of the physiopathology, resection of the dilatation...
ed colon is inessential for the operation of the megacolon.

The enlarged intestine, usually rectosigmoid colon, is likely to be the most common locus of the fecaloma or volvulus. Therefore the resection of rectosigmoid is done for these complications (Earman, 1972; Todd et al., 1969).

Some authors recommend Duhamel's operation (Milton, 1976; Joffre and Moreira, 1988). From this point of view, it is ideal for the relapse of complications should be minimal. However this technique reports the high rate of morbidity and mortality.

In developing countries, there are not many specialists in digestive surgery. Moreover very few patients can receive TPN (total parenteral nutrition). For these reasons, the operative technique should be as straight as possible.

Moreira et al. have operated 624 patients with Chagasic megacolon using Duhamel's technique. Mortality rate was 6.6% while early post-operative complications such as into-anal suppration (7.6%) and lower colon necrosis (2.4%) were developed.

On the other hand, the abdominal rectosigmoidectomy is easier and the rate of complication is not so high. Most general surgeons in Bolivia can perform it. This is the reason why the abdominal rectosigmoidectomy was chosen as a standard technique in this protocol.

2) Location of anastomosis

Another important point is the location of colorectal anastomosis from the anal verge. If it is lower, recurrence of fecaloma or volvulus is fewer, because more of the aganglionic portion of the rectum would be resected. However, the lower anastomosis makes it more difficult for the operative techniques and therefore is recognized higher rate of post-operative complications. Milton reported that the anastomosis should be performed within 2-4 cm from the pectinate line.

Mechanical suture devices are used for lower colorectal anastomosis. They can also be used also for cases of Chagasic megacolon (Cuitait, 1980), but in many cases the wall of the colon is too thick to be anastomosed with them.

Moreover it is so expensive that they can not be used for most patients in Bolivia.

In this study, most anastomoses were performed between 5 to 10 cm from the anal verge. Only 3 cases with lower anastomosis used mechanical suture devices.

3) Direct or delayed anastomosis

For decreasing complications, the delayed anastomosis (two or three stages operation) was recommended.

When the delayed anastomosis indicated, the patient generally went back home to the rural village with a colostomy. After that, most never came back to the hospital for the definitive operation unless any urgent problems appeared.

Therefore this protocol applied the direct anastomosis as first priority and the delayed anastomosis in the same hospitalization as second.

There were no deaths in either groups of the direct and delayed anastomosis. Morbidity was also low in both of them.

In this study, covering colostomy was performed for just a single case. Covering colostomy was worth considering but the result verifies it is not always necessary if the pre-operative preparation is completed.

One of the problems with this protocol was the lengthy hospital stay required when they received the definitive operation during the same hospitalization. SCGH and the Japanese project team supported some cases financially. Without such assistance, they would not have been able to continue further treatments. Ideally, the protocol will remain sustained by themselves, but financial condition of the hospital is quite inadequate.

Another problem is the difficulty of the follow-up of the patients. Most patients do not return to hospital unless they face severe problems. Alternative incentives, such as free charge of examination etc. should be considered.

This is a preliminary report and we regret it is too short to assess the study more in detail. However the early results of this are considered fairly satisfactory and the course should be continued.

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