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Torsion of the omentum. A rare cause of acute abdomen

RESUMEN

Objetivo: describir signos y síntomas, evolución y tratamiento del abdomen agudo por torsión del epiplón mayor.

Métodos: revisión de pacientes con abdomen agudo por torsión de epiplón mayor, atendidos entre 1998 y 2007. Las variables fueron edad, sexo, índice de masa corporal, signos y síntomas, tiempo de evolución, pruebas de laboratorio y radiología y tratamiento. Se utilizó estadística descriptiva.

Resultados: siete (63.6 %) mujeres y cuatro (36.4 %) hombres, con edad de 33 años (rango 20 a 58), índice de masa corporal > 25 en nueve (81.8 %), tiempo de evolución de 6.54 ± 3.47 días. Todos con dolor abdominal, seis (54.5 %) con distensión abdominal, cuatro (36.4 %) con dificultad para deambular, tres (27.3 %) con mal estado general, 10 (90.9 %) con leucocitosis leve y cinco (45.4 %) con cirugía abdominal previa. El diagnóstico fue por laparotomía y el tratamiento por resección del segmento del epiplón. Sin complicaciones.

Conclusiones: la torsión segmentaria del epiplón mayor es una causa rara de abdomen agudo. El dolor es el síntoma más frecuente y semeja al de apendicitis aguda. Su diagnóstico frecuentemente es durante la cirugía y el tratamiento es la resección del segmento afectado.

SUMMARY

Objective: to describe the clinical aspects, treatment and evolution of acute abdomen caused by torsion of the greater omentum.

Methods: retrospective analysis study consisted of a group of eleven patients with acute abdomen caused by torsion of the greater omentum. The variables included were age, sex, body mass index (BMI), clinical picture, evolution time, laboratory tests, radiology and treatment. Descriptive statistical analysis was employed.

Results: seven (63.6 %) women and four (36.36 %) men; mean age 33 (20 to 58) years; BMI > 25.0 in nine (81.81 %); average evolution 6.54, SD 3.47 days. All presented abdominal pain, six (54.5 %) abdominal distension, four (36.3 %) walking difficulty, three (27.27 %) general malaise, ten (90.9 %) slight leucocytosis, five (45.4 %) previous surgery. In all cases diagnosis was made by laparotomy, treatment was resection of the affected segment, and no complications were seen.

Conclusions: segmental torsion of the greater omentum is a rare cause of acute abdomen. Pain is the most frequent symptom, and the condition resembles acute appendicitis. It is often discovered during surgery and is treated by the removal of the affected omentum segment.

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Introduction

Segmental torsion of the greater omentum is a rare cause of acute abdomen, and its clinical presentation mimics acute appendicitis.[1] Bush first described segmental torsion of the greater omentum in 1896. By 1908 approximately 112 cases had been described,[2] and in 1991 Coppo gathered data on nearly 150 cases.[3,4] The first two cases[5,6] of segmental torsion of the greater omentum at the Hospital General Regional 36, *Instituto Mexicano del Seguro Social* in Puebla, Mexico, were reported in 1998 and 2004. By 2001 a little over 300 cases had been reported, 85 % of them in the adult population and the remaining 15 % in the pediatric population, almost all diagnosed during a laparotomy. In children, 0.05 to 0.1 % of cases were diagnosed during laparotomy for acute appendicitis.[1,7] The condition is more common in males, with a ratio of 2-5:1,[1,8] in the third and fourth decades of life, but it can occur at any

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age.[5,6] It can be primary or idiopathic, when no underlying cause or associated factor are found, or secondary, when the cause is identified.[1,9-11] Secondary torsion is more common than primary.[1] Longer or more swollen than normal omentum, internal hernias, inflammatory pathologies of other organs such as acute cholecystitis, pancreatitis, and adnexitis, tumors, and postsurgical adhesions are causes of secondary torsion of the greater omentum.[1] Its etiology is uncertain but has been associated with some predisposing factors: obesity, sex, sudden strong increase in intra-abdominal pressure brought on by violent exercise or coughing, traumas, structural changes like large pedicle, longer or more twisted than the normal epiploic blood vessels, accelerated peristalsis, postsurgical adhesions, or some inflammatory process in another organ that causes a defensive movement of the greater omentum away from the affected site,[5,6,9] Segmental torsion of the greater omentum presents with severe abdominal pain that is very similar to acute appendicitis or less similar to any other surgical pathology. However, the evolution of symptoms and clinical signs is slower and less intense, which creates a delay in the time it takes for the patient to seek medical treatment.[10,11] The diagnosis is frequently made during laparotomy.1,5-6 However, ultrasound and computed axial tomography are useful tools for making a preoperative diagnosis when they are available.[12-17] Segmental torsion of the greater omentum is considered a cause of acute abdomen and right lower quadrant pain (RLQP).[5]

When omental torsion is present, edema and the inflammatory process make the clinical presentation progress to necrosis of the twisted segment, more frequently on the right side due to the length and characteristics of the greater omentum.[8,11]

The treatment is the removal of the affected segment either by means of laparotomy or laparoscopy, with excellent results.[18-21]

Table 1
Signs and symptoms in patients with segmental torsion of the greater omentum

	n = 11	%
Pain	11	100.0
Reboundness	8	72.7
Abdominal distention	6	54.5
Ambulatory difficulty	4	36.3
Vomiting	4	36.3
Fever greater than 38.2 ºC	4	36.3
General malaise	3	27.2
Constipation	3	27.2

The purpose of this article is to present the results of experience with acute abdomen caused by segmental torsion of the greater omentum, its clinical characteristics, treatment, and evolution.

Methods

A retrospective review was conducted in all cases of acute abdomen in a second level medical facility in Puebla, Mexico, during a ten year period.

Surgical data were reviewed for the study. The variables were age, sex, body mass index (BMI), time of evolution from the onset of symptoms to surgical intervention, hemoglobin, leucocyte, and neutrophil levels, results of X-ray studies of the abdomen, preoperative and postoperative diagnosis and evolution. The BMI was interpreted based on Quetelet's Index: 18 to 25 healthy, above 25 overweight, above 30 somewhat obese, and above 40 morbidly obese. Descriptive statistical analysis was employed.

Results

Between January 1, 1998 and December 31, 2007, a total of 112,830 surgical procedures were performed (source: Unique Information System database of the Puebla State Regional Office of the *Instituto Mexicano del Seguro Social*). Of these, eleven procedures were for acute abdomen caused by torsion of the greater omentum, seven (63.6 %) of the surgical patients were women and four (36.3 %) were men, with a median age of 33 years (20 to 58); fever was present in four (36.3 %) patients; the average BMI was 29.06 kg/m^2 (SD 2.76); two patients (18.1 %) had a BMI < 24.91 kg/m^2 and nine (81.8 %) had a BMI > 25 kg/m^2; the average duration of clinical presentation of symptoms was 6.5 (SD 3.47) days.

The clinical picture of the patients is shown in table 1.

Hemoglobin was slightly elevated in four (36.3 %) patients and leucocytes/neutrophils in ten (90.9 %); plain x-rays of the abdomen showed fixed, air-filled small bowel loop in five (45.4 %) patients, air/fluid levels only in one (9.09 %) patient, effa-cement of the right psoas muscle in one (9.09 %) patient, and fixed loop in the right iliac fossa in one (9.09 %) patient.

The predisposing factors, cause and type of lesion, surgery performed, and evolution of the cases are shown in table 2.

In all the patients the preoperative diagnosis was acute abdomen and the postoperative was segmental torsion of the greater omentum.

The histopathological report in all cases indicated segmental torsion of the greater omentum.

None of the patients reported any complications in a one-year follow-up.

Discussion

Segmental torsion of the greater omentum is a rare cause of acute abdomen. Its clinical presentation mimics acute appendicitis and other pathologies that cause acute abdomen. In this study group, females were more commonly affected, although most authors report predominance in men,[8] in some groups no predominance by sex is mentioned.[1] Reported incidence is very low, between 0.16 and 0.37. The duration of the clinical presentation of symptoms in this group is greater than that of acute abdomen caused by other pathologies, probably due to the fact that the intensity of symptoms is less, which concurs with reports from other groups.[1]

Pain is the predominant symptom, and its location depends on the affected site of the omentum. In some groups, pain has been reported in all the cases. It can occur in the upper and lower right quadrants of the abdomen and is continuous with sudden onset. Pain is the pivotal pathological symptom, and in our study group it was present in all the cases. The fever that was present in 36.3 % of patients was higher than 38.2 ºC, which does not concur with information from some authors who reported temperature elevations up to 39.5 ºC.[1]

Previous surgery was a predisposing factor in five (45.4 %) of the patients with a BMI above 25. Nine (81.8 %) coincides with data in world literature that identifies obesity as a predisposing factor for the development of segmental torsion of the greater omentum.[1,5-6,9]

In two (18.2 %) patients the cause of the torsion was identified: In one (9.09 %) patient, an intensifying chronic calculous cholecystitis caused pain in the upper right quadrant of the abdomen and in one (9.09 %) a twisted right ovarian cyst. The acute inflammatory process in these organs caused the omentum to migrate, resulting in omental torsion.

As in other study groups, all the patients underwent surgery for acute abdomen. The definitive diagnosis was obtained by laparotomy. In the cases where there was no preceding appendectomy, the preoperative diagnosis was probable acute appendicitis due to the similarity of symptoms. As in the majority of published studies, no preoperative diagnosis was made in any of the cases in this group.[22]

The imaging data from plain x-rays of the abdomen showed the presence of a fixed, air-filled small bowel loop in six (54.5 %) patients, an indication that suggested surgical acute abdomen. Although some authors reported that therapeutic diagnostic laparoscopy can be very useful for diagnosis and managing segmental torsion of the greater omentum,[16-21] the majority of cases reported in the literature have been diagnosed by laparotomy.

Treatment consists of removing the affected segment of the greater omentum, as well as managing concomitant pathology when it exists.[17-19] Conservative management in patients without associated complications has also been reported.[23] In this study group, treatment by laparotomy achieved good results without complications. However, treatment by laparoscopy can achieve a better aesthetic results and lessens the length of hospitalization.[20-21]

Table 2
Clinical characteristics of patients with segmental torsion of the greater omentum

Case	Sex	Age (years)	BMI	Previous surgery	Duration (days)	Location of pain	Fever	Cause of lesion	Type of torsion	Surgical procedure	Evolution
1	F	20	28.84	Caesarian	6	RLQ	N	X	Idiopathic	PO + IA	Good
2	F	33	32.02	None	4	RLQ	F	X	Idiopathic	PO + IA	Good
3	F	58	29.74	Appendect.	2	RUQ	N	CCC	Secondary	PO + Cholec	Good
4	M	26	24.91	None	12	RLQ	N	X	Idiopathic	PO + AI	Good
5	F	32	30.26	None	8	RLQ	N	TROC	Secondary	PO + RSO + IA	Good
6	M	41	29.49	Appendect.	5	RLQ	F	X	Idiopathic	PO	Good
7	F	33	31.98	None	9	RLQ	N	X	Idiopathic	PO + IA	Good
8	F	23	23.33	None	12	RLQ	N	X	Idiopathic	PO + IA	Good
9	F	41	30.85	Appendect.	2	RLQ	F	X	Idiopathic	PO	Good
10	M	36	27.81	None	5	RLQ	N	X	Idiopathic	PO + IA	Good
11	M	28	30.47	Appendect.	7	RLQ	F	X	Idiopathic	PO	Good

BMI = body mass index, RLQ = right lower quadrant, RUQ = right upper quadrant, N = normal, F = fever, X = non identified, CCC = chronic calculous cholecystitis, TROC = twisted right ovarian cyst, PO = partial omentectomy, IA = incidental appendectomy, Cholec = cholecystectomy, RSO = right salpingoophorectomy, M = male, F = female

Conclusions

Segmental torsion of the greater omentum is present in very few cases of acute abdomen, but it can be a cause of acute abdomen. It has a tendency to present in obese women. Preoperative diagnosis is difficult since, as in all cases of acute abdomen, the predominant symptom is pain. The clinical presentation is similar to acute appendicitis or to any other cause of surgical acute abdomen where intense pain is the predominant symptom. For the most of them, the idiopathic is frequent condition, which makes it difficult to identify the cause in up to 33.3 % of cases. Preoperative clinical diagnosis is difficult, and we must depend on complementary studies when available. Management of the condition is surgical including a partial omentectomy of the affected segment and treatment of the original cause of the torsion. The evolution is good when correct treatment is applied, even when delayed.

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