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Sigmoid volvulus in pregnancy: Current approach in diagnosis and treatment

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Ethics Committee Approval
The approval for the study was obtained from the Ethics Committee of Ataturk University Faculty of Medicine (Number: 2022-88).
All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

Conflict of Interest
No conflict of interest was declared by the authors.

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Abstract

Background/Aim: Sigmoid volvulus (SV) is an uncommon disease worldwide, while SV complicating pregnancy is extremely rare. The aim of this study is to evaluate the current diagnostic and therapeutic options in SV during pregnancy in a case series.

Methods: The clinical data of 1,046 patients with SV, including 11 pregnant women, were reviewed retrospectively. Age, gestation period, previous history of volvulus, presence of comorbidities, duration of complaints, symptoms, signs, diagnostic tools, treatment procedures and prognosis were noted. Rigid or flexible sigmoidoscopy and magnetic resonance imaging (MRI) were used in the diagnosis, while abdominal X-ray and computerized tomography (CT) were avoided. Stable patients were treated with endoscopic decompression, while emergent surgery was needed in complicated cases with necrosis, peritonitis, or unsuccessful endoscopic decompression.

Results: The mean age was 31.0 years (24-39 years). All cases were multiparous. Of the patients, 6 (54.5%) were in third trimester, 4 (36.4%) were in second trimester, and 1 (9.1%) was in first trimester. SV was diagnosed by endoscopy in 6 patients (54.5%), by magnetic resonance imaging (MRI) in 2 (18.2%), and during laparotomy in 3 (27.3%) patients. 6 patients (54.5%) were decompressed by sigmoidoscopy, while 5 cases (45.5%) were treated with surgery. One patient (9.1%) was lost due to toxic shock arising from sigmoid necrosis, while a stillbirth (9.1%) was developed following the surgical procedure in the same case.

Conclusion: Although common findings including abdominal pain, obstipation and distention are prominent clinical features of SV, some clinical findings of pregnancy may cloud the pathology during pregnancy. We recommend sigmoidoscopy or MRI in the diagnosis of pregnant patients with suspected SV. Although enlarged uterus is generally thought as an impediment factor for endoscopic decompression, flexible sigmoidoscopy is currently preferred in the treatment of uncomplicated and non-gangrenous patients, while gangrenous or complicated cases are required emergency surgery regardless of the gestation period.

Keywords: Sigmoid volvulus, Pregnancy, Endoscopy, Surgery

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Introduction

Sigmoid volvulus (SV) is a rare disease worldwide [1], though endemic in Turkey [2]. Our series included 1,046 cases with SV from June 1966 to January 2022. This is the largest single-center SV series in the world [2]. Similarly, SV complicating pregnancy is an extremely rare entity with about 110 cases reported to date [3]. In our series, 11 of 189 women (5.8%) were pregnant. This is also one of the largest single-center pregnant SV series in the world [4]. Our aim is to set forth the current diagnosis and treatment of SV complicating pregnancy.

Materials and methods

The data of 1,046 patients treated with diagnosed SV between June 1986 and January 2022 were reviewed retrospectively. Among 189 women, 11 pregnant patients were evaluated with age, gestation period, previous volvulus history, comorbidities, duration of complaints, symptoms, signs, diagnostic tools, treatment options and prognosis.

Following all of rapid and effective resuscitation, maternal and fetal clinical examination, and medical intervention including tocolytic medication or triggering an early labor in some cases, rigid or flexible sigmoidoscopy was used in the diagnosis. Magnetic resonance imaging (MRI) was also applied as a diagnostic tool in recent years, while ultrasonography (USG) was used in the evaluation of fetal health in some patients. X-ray studies including plain abdominal radiographies or computerized tomography (CT) were avoided. As a therapeutic procedure, endoscopic decompression was applied in stable patients, while emergent surgery was required in complicated cases with suspicion of necrosis, findings of peritonitis or unsuccessful endoscopic decompression. Still, elective sigmoid colectomy in the postpartum period was advised in successfully decompressed patients.

The approval for the study was obtained from the Ethics Committee of Ataturk University Faculty of Medicine (Number: 2022-88).

Statistical analysis

Quantitative parameters were performed as arithmetic mean (SD) and as number and percentages for the categorical variables. The distribution of the numerical data was evaluated histogram graphs. The software package SPSS 23.00 was utilized for the statistical analysis.

Results

As demonstrated in table 1, the mean age was 31.0 years (24-39 years). All cases were multiparous. The number of patients in first, second and third semester were 1 (9.1%), 4 (36.4%) and 6 (54.5%), respectively. Of the patients, 1 (9.1%) had chronic obstructive pulmonary disease, whereas another patient had recurrent SV history. The mean symptom period was 30.5 hours (12-72 hours). The obstipation, distention and abdominal pain were present in all cases, while 9 (81.8%) patients had vomiting. On clinical examination, abdominal tenderness and distention were found in all cases, while abnormal bowel sounds were seen in 8 (72.7%), rebound tenderness in 3 (27.3%), and melanotic stool in 1 (9.1%). One patient (9.1%) was in shock state. We diagnosed SV by endoscopy in 6 (54.5%), by MRI in 2 (18.2%), and at laparotomy in 3 (27.3%) patients. USG was used in 6 patients (54.5%) and demonstrated healthy fetus in all patients applied. In this series, sigmoidoscopic decompression was tried in 7 patients (63.6%) and 6 (54.5%) were treated with 85.7% success rate, while 5 patients (45.5%) in the whole cohort required emergent surgery. In this series of emergent surgery, one patient (9.1%) with late admission, comorbidities, and sigmoid gangrene, died due to gangrene and toxic shock, while wound infection was developed in another patient. In the decedent case, a stillbirth was developed following the surgical procedure (9.1%), while fetal health was without complication in other cases. Living 10 patients were discharged in a mean 5.0 days (1-15 days).

Figure 1: Endoscopic appearance of sigmoid volvulus (L: obstructive lumen)

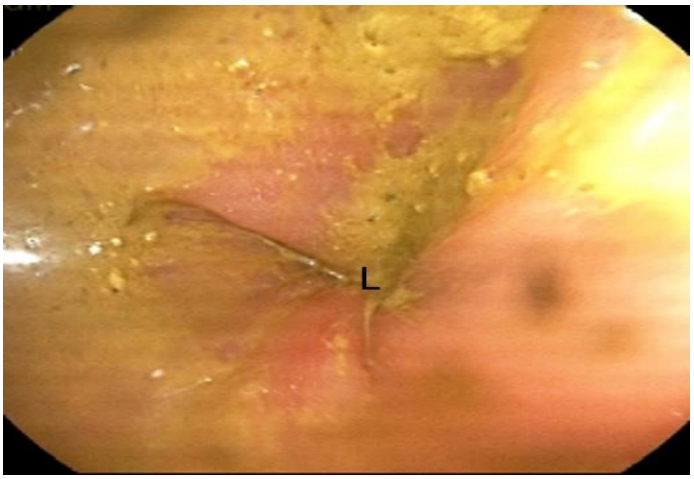
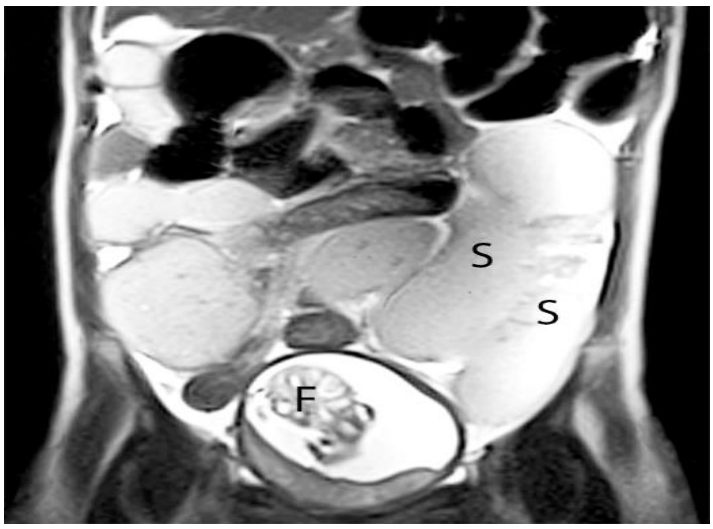


Table 1: Patients and related results

No	Age	Trimester	Symptom period (hours)	Presence of shock	Sigmoid gangrene	Endoscopy	Surgery	Mortality	Morbidity	Hospitalization Period (days)
1	36	3	24	-	-	-	Detorsion	-	Wound infection	15
2	26	2	36	-	-	Successful	-	-	-	2
3	39	3	72	+	+	-	Sigmoidectomy, Hartmann's colostomy	Toxic shock	-	-
4	30	3	20	-	-	Unsuccessful	Detorsion	-	-	8
5	31	3	24	-	-	Successful	-	-	-	2
6	27	2	36	-	+	-	Sigmoidectomy, anastomosis	-	-	9
7	24	3	12	-	-	Successful	-	-	-	2
8	33	1	22	-	-	Successful	-	-	-	1
9	29	3	18	-	-	Successful	-	-	-	1
10	30	2	48	-	+	Gangrene	Sigmoidectomy, anastomosis	-	-	8
11	36	2	24	-	-	Successful	-	-	-	2

Figure 2: Coronal T2 Weighted magnetic resonance image (S: dilated sigmoid loops, F: fetus)



Discussion

Bowel obstruction in pregnancy is a rare problem with an incidence ranging from 1.5 to 66.6 per 100,000 deliveries. However, SV is in the first two causes of intestinal obstruction complicating pregnancy, occurring in 24-44% of all cases [5, 6]. The reason of this interesting correlation in pregnant women is the presence of an enlarged uterus, blocking the spontaneous untwisting of sigmoid colon [7].

The clinical presentation of SV complicating pregnancy may sometimes be complex. In spite of modern technology, the diagnosis is made during laparotomy or autopsy, even if rare. Abdominal distention, obstipation and pain/tenderness are the main clinical features of SV in pregnancy. However, some physiologic symptoms of pregnancy, such as nausea, vomiting and abdominal pain, may cloud the clinical appearance of SV and delay the diagnosis [3-9]. Ultrasonography may be useful for evaluating fetus rather than diagnosing SV [8]. Sigmoidoscopy, preferably flexible procedure, is an effective procedure in both diagnosis and treatment of SV in pregnant women regardless of the gestation period, in addition to its being the unique method in the evaluation of the mucosal viability [10-12]. Endoscopy demonstrates a spiral twisting of the bowel (Figure 1). Similarly, the diagnostic accuracy of MRI is high in SV [4]. MRI shows the whirl sign in mesentery with a dilated sigmoid colon in addition to fetus-related material (Figure 2). If endoscopy or MRI are not available, a single abdominal X-ray radiography may be used [7, 9, 13]. Similarly, if needed, a computed tomography (CT) imaging can be taken as a terminal choice [8, 13]. But in general, X-ray studies and CT are avoided because of the probable radiation risk to the fetus. For the same reason, we prefer and recommend diagnostic flexible sigmoidoscopy or MRI in pregnant women.

The treatment requires a multidisciplinary approach involving obstetricians, neonatologists, gastroenterologists and general surgeons [3, 5, 6, 8, 13]. An effective resuscitation is essential. Medication is needed in patients with uterus irritability or fetal immaturity. Induction of delivery and abortion are decided depending on the maternal and fetal conditions [8, 12]. For solving the intestinal twisting, dilated uterus is generally thought as an impediment factor for endoscopic decompression [14]. However, according to our experience, flexible sigmoidoscopy is the best way to overcome the bowel obstruction in non-gangrenous patients. Hence, recent literature supports the importance of flexible sigmoidoscopy [10-13]. It is clear that emergency surgery is needed in gangrenous cases or in patients with unsuccessful endoscopic decompression [5, 7, 8]. Despite a clear improvement in recent years, the prognosis of SV complicating pregnancy is still relatively poor with a 6-12% maternal and 20-26% fetal mortality [7].

Although this study involves one of the largest single-center series of pregnant SV in the world, the evaluation of 11 cases is a major limitation of this study. Additionally, being a retrospective study and changing the diagnostic and therapeutic tools during the relatively long consideration period are other limitations.

Conclusions

SV complicating pregnancy is a very rare but crucial problem. We recommend flexible sigmoidoscopy or MRI in the diagnosis of pregnant patients with suspected intestinal obstruction. Flexible sigmoidoscopy may be effective in the treatment of non-gangrenous and uncomplicated patients regardless of the gestation period.

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