Management of Sigmoid Volvulus on Basis of Clinical Scenario, Radiological Findings and its Outcome.

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ABSTRACT

Background: Volvulus of the sigmoid colon is a common cause of intestinal obstruction in Eastern Europe, Russia, Africa, India, and Iran. Classical clinical picture together with plain radiographs is usually sufficient to diagnose sigmoid volvulus condition. The aim of the study is to know the clinical course and manifestations, various methods of treatment and outcome of sigmoid volvulus. **Methods:** Study was carried out as regards to etiological factors which predisposes to the sigmoid volvulus, the clinical features, modes of treatment and outcome. A detailed history was obtained and examination was done. The plain X-ray of abdomen was taken in all cases which were of great diagnostic aid. **Results:** 100% of patients presented with distension of abdomen, Pain abdomen, constipation and 80% of patients had vomiting, signs of dehydration, abdominal tenderness. In 20 cases of sigmoid volvulus, derotation was done in 3 patients (15%), derotation and tube colostomy in 1 patients (5%), primary resection and end to end anastomosis in 11 patients (55%). **Conclusion:** Primary resection and end to end anastomosis stands out as the most satisfactory line of treatment with reasonably good results and the success rate in this study is 80%.

Keywords: Sigmoid volvulus, Management, Outcome.

INTRODUCTION

Volvulus of the sigmoid colon is a common cause of intestinal obstruction in Eastern Europe, Russia, Africa, India, and Iran.[1] Classical clinical picture together with plain radiographs is usually sufficient to diagnose sigmoid volvulus condition. Diagnostic difficulties, however, are not uncommon. A recent report from Finland, where the disease is endemic, confirms the problem of poor diagnostic accuracy. [2]

A long chronically distended sigmoid colon hangs low in the pelvis and drags on its own mesocolon. The mesocolon elongates borrowing peritoneum from the posterior abdominal wall, so that the ends of the pelvic loop are approximated to each other. In most of the cases, the upper limit of the loop descends in front of the lower, twisting on its mesenteric axis, from one and a half to two turn in an anticlockwise direction.

The mean age of sigmoid volvulus patients was 49 years (range 19-75) and male to female ratio was 1:1. In elderly patients, the common etiology includes malignant obstruction, ischemia, hernial incarceration, adhesions and rarely volvulus.[3] In many instances, the etiology and level of obstruction can be identified radiologically. An abdominal radiograph is usually sufficient for diagnosing the level of bowel obstruction.

Although surgical exploration itself is an accepted mode for diagnosing acute abdomen, accurate pre-operative diagnosis will reduce the morbidity and mortality. Delay in diagnosis and treatment may lead to sigmoid ischaemia, Infarction, peritonitis, and septicaemia, resulting in mortality of up to 60%.[4]

Many of treatment measures are available including by passing a flatus tube per rectum, colopexy, mesocoloplasty, though there is an excellent immediate prognosis the subsequent recurrence of the volvulus is as high as 40%. So a definitive treatment must be carried out. Emergency laparotomy and resection with or without primary resection and anastomosis is indicated when non operative methods fail or when there is evidence of strangulation, infarction or perforation.[5]

The aim of the study is to know the clinical course and manifestations, various methods of treatment and outcome of sigmoid volvulus.

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MATERIALS AND METHODS

A total of 1340 emergency surgery cases in relation to abdomen were evaluated during this prospective study from January 2015 to January 2017. A detailed

study of 20 cases of sigmoid volvulus, admitted to Government General Hospital, Anantapuramu were included in this study. Study was carried out as regards to etiological factors which predisposes to the sigmoid volvulus, the clinical features, modes of treatment and outcome. A detailed history was obtained and examination was done. The plain X-ray of abdomen was taken in all cases which were of great diagnostic aid.

Immediately after the admission of the patient, a thorough clinical examination was done and a provisional diagnosis of volvulus of the sigmoid colon was made in all the cases.

Routine investigations of blood and urine showed no significant variation from normal. On radiological examination in 18 cases the clinical diagnosis of sigmoid volvulus was confirmed by plain x-ray abdomen and the remaining 2 cases were diagnosed on exploratory laparotomy. Bent inner tube sign was present in 16 patients and in rest of the cases distended large bowel loops were noted, on Plain x-ray abdomen, twist at the base of the mesocolon, above which the grossly dilated, gas filled loop of obstructed sigmoid was seen.

Based on clinical scenario and investigations, medical and surgical management was done. Outcome of all the patients after treatment of sigmoid volvulus was assessed. Patients details were entered into excel sheet and tabulated.

RESULTS

The total number of abdominal emergencies admitted in General Surgery wards were 1340. Among these patients were presented with volvulus of the sigmoid colon were 20, was 1.4%.

The maximum number of cases (30.00%) fell in the age group of (41-50Years) closely followed by 6th decade (20.00%). The youngest patient in this series was 14 years old and the oldest was 80 years old. In the present series both extremes in the ages were least affected [Table 1]. Males were predominantly affected than females. 16 (80%) were males and 4 (20%) were females.

Table 1: Incidence of Sigmoid volvulus in relation to Age in Years

Age range by decades (years)	No. of cases	Percentage
0-10	-	-
11-20	1	5%
21-30	3	15%
31-40	3	20%
41-50	6	30%
51-60	5	20%
61-70	1	5%
71-80	1	5%

90% (18) of the patients in this study were from rural areas and only 10% (2) from urban areas. 16 among the 20 patients were labourers (Mannual workers) and the rest of them were non labourers. Most of the

patients (90%) in the non-labourer group were found to be cultivators [Table 2].

Table 2: Sigmoid volvulus incidence in relation to Residence and Occupation.

	Residence		Occupation	
	Rural	Urban	Labourer	Non-labourer
No. of cases	18	02	16	04
Percentage	90%	10%	80%	20%

The onset of the disease was sudden in 17 cases (85%) and gradual in only 3 cases (15%). The duration of the illness was one day in 8 cases (40%), 2to 4 days in 10 cases (50%) and beyond 4 days in only 2 cases (10%) [Figure 1].
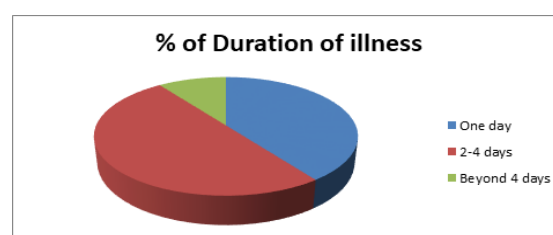

Figure 1: Duration of illness due to sigmoid volvulus

Abdominal pain, distension of the abdomen and constipation were present in all the cases. 08 cases (40%) had intermittent colicky pain and 12 cases (60%) had continuous pain. In 11 cases (55%) the pain was lower abdominal and in 09 cases (45%), pain was generalized [Table 3]. There were no vomiting in 4 cases (20%), and vomiting were present in the remaining 16 cases (80%). Only one case of recurrent sigmoid volvulus has come across.

Table 3: Clinical symptoms & signs of Sigmoid volvulus.

Symptoms	No. of cases	Percentage
Pain abdomen	20	100
Distension of the abdomen	20	100
Constipation	20	100
PAIN		
a) Nature		
i) Intermittent	08	40
ii) Continuous	12	60
b) Site		
i) lower abdominal	11	55
ii) Generalised	09	45
Vomitings: i) Absent	04	20
ii) present	16	80
Signs	No.of cases	Percentage
General		
a)Dehydration	16	80
b)Shock	04	20
Abdominal		
a)distension	20	100
b)visible peristalsis	02	10
c)Tenderness	16	80
d)rigidity	04	20
Absense of bowel sounds	09	45

In 15 patients (75%) surgery was done. Operative detorsion and fixation of the sigmoid colon to the parietal peritoneum was done in 3 cases with the idea of overcoming the crises and to post for an elective resection of the sigmoid at a later date. In one case after untwisting of the volvulus, tube colostomy was done. The patient didn't develop recurrence after surgery. Primary resection and end to end anastomosis was carried out in 11 cases (55%), irrespective of the state of the bowel [Table 4].

3 cases were treated by passing the flatus tube per rectum with the patient in knee elbow position. They were advised to come for interval sigmoidectomy after 4 weeks. But none of them turned up for surgery. In two patients, the obstruction was relieved after soap and water enema with the passage of large quantities of faeces and flatus. One among them was a male patient aged 75 years, and was not willing for any operation.

Two elderly female patients of 60 years age could not be revived as they were brought to the hospital in a state of shock. Even with the resuscitative measures they have succumbed, probably due to gangrene with peritonitis. The duration of the illness in these patients was 5 and 6 days respectively.

Table 4: Management of Sigmoid volvulus

Method	No.of cases	Percentage
Conservative		
a)Deflation by passing a flatus tube	3	15
b) Soap and water enema	2	10
Operative		
a) Simple untwisting	3	15
b) Tube colostomy	1	05
c) Primary resection and end to end anastomosis	11	55

Among the operated patients gangrene of the bowel was present in 8 patients. The direction of the twist was anticlockwise in 16 cases (80%), coinciding with the Indian and western. 8 patients had one and half turns (5400), 7 patients had two and half turns (9000) and in 3patients there was turns (7200) of the sigmoid volvulus.

Among 14 patients redundant sigmoid loop was found. The bowel was found to be loaded with feaces in only 10 cases [50%) and adhesions were seen in two cases (10%).

Only one case of recurrent sigmoid volvulus was encountered in this study. The patient underwent operative detorsion for sigmoid volvulus 5 years back. Resection and end to end anastomosis was carried-out in that patient.

There are no recurrent episodes in any of the cases that were treated conservatively or by simple operative detorsion in this series.

The overall mortality in the present series was 41.5%. The highest mortality was encountered among the elderly patients. Among the 16 male patients, there were 3 deaths where as in females there was 1 death. There was one death among the 3 cases where simple operative detorsion was done. 3 patients died among the 11 cases where primary resection and end to end anastomosis was done with mortality rate of 20%. (All of the deaths occurred with a gangrenous bowel).

DISCUSSION

The incidence of sigmoid volvulus in the present series is 8.3% in similar with report of Rennie from Bihar, in which the volvulus of the sigmoid accounted for 15% of all the cases of intestinal obstruction.[6] But in contrast, Singh & Sarkar from Bihar reported that sigmoid volvulus has occurred in only 4% of cases of all intestinal obstructions.[7] The reports from Russia, Germany and Scandinavia indicate the incidence as high as 30-50%.

The maximum number of cases (30%) fell in the age group of (41-50Years) closely followed by 6th decade (20%). Agarwal & Mishra from India and reported the maximum incidence in 4th and 5th decades of life.[8] In the earlier studies by Singh & Sarkar from India, also the high incidence was noted in 5th decade.[7] But in contrast Arnold GJ recorded the maximum incidence in 8 the decade.[9]

There were 16 males and 4 females. Male sex was affected more than the females in conformity with an Indian study by Singh & Sarkar.[7] However Agarwal & Mishra,[8] from India and Anderson & Lee,[10] from England reported an equal incidence in both the sexes. Believe that greater strength of the abdominal wall and ingestion of greater quantity of food may be responsible for increases incidence in males.[11] The lax abdominal musculature, the wider pelvis and smaller size of the sigmoid colon may help in spontaneous detorsion of the volvulus in females.[12]

The very high incidence of sigmoid volvulus in labourers (80%) and farmers reported here is, in agreement with the observations of Singh & Sarkar.[7] There, people after doing heavy work in the fields during the day time consumed large quantities of food (mainly rice) during the night time, which gives bulky faeces, loading of the pelvic, colon, which itself is again a precipitating factor.

The duration of the illness was one day in 8 cases (40%), 2to 4 days in 10 cases (50%) and beyond 4 days in only 2 cases (10%). In the study of Anderson & Lee,[10] the duration of the illness was from 12 hours to 21 days with an average of 5.7 days.

Abdominal distension was present in 90.3% of cases in study of Anderson & Lee,[10] whereas Singh & Sarkar,[7] from India in a study of 30 cases found abdominal distension in all cases.

In the study of Anderson & Lee,[10] in 59 cases, deflation was done (84.7%). Tanga MR carried out

the fixation of the sigmoid loop to the lateral abdominal wall through a Foley's catheter placed in the sigmoid colon with reasonably good results.[13]

Resection and anastomosis of the bowel was carried out in 37 patients in the series of Anderson & Lee and in 5 patients in the series of Singh & Sarkar.[7,10] Even with gangrenous bowel primary resection was carried out by Sutcliffe,[14] but in contrast Wuepper et al,[15] didn't advise primary resection and anastomosis, he concluded that there is increased danger of disruption of the anastomosis. According to Ahsan & Rahman,[16] primary resection and end to end anastomosis can be done in Good risk cases as the patients refuse a second operation.

Paul Mikulicz's exteriorization and Hartmann's operation was not carried out in any of the patients in this series. Andersen & Lee preferred Hartmann's operation especially when the bowel is gangrenous and he obtained good results compared to primary resection.[10]

Among the operated patients gangrene of the bowel was present in 8 patients. In the studies of Andersen & Lee and Singh & Sarkar gangrene of the bowel was noted among 13 and 5 patients respectively.[7,10]

There are no recurrent episodes in any of the cases that were treated conservatively or by simple operative detorsion in this series. Wuepper et al.[15] Andersen & Lee,[10] encountered 9 cases of recurrence in his study.

The overall mortality in the present series was 41.5%. This is comparable to the reports of Hinshaw & Carter,[17] Wuepper,[15] who have recorded 42% and 31% respectively. In the recent studies, Anderson & Lee,[10] from England had reported and overall mortality rate of 20.9%, whereas Singh & Sarkar,[7] from India recorded a mortality rate of 14.28%.

There was one death among the 3 cases where simple operative detorsion was done. 3 patients died among the 11 cases where primary resection and end to end anastomosis was done with mortality rate of 20%. (All of the deaths occurred with a gangrenous bowel). There were 10 deaths among 37 patients (27%) in the study of Anderson & Lee and one death among 5 patients in the series of Singh & Sarkar,[7,10] where primary resection and end to end anastomosis was done.

CONCLUSION

Thus from the above findings it can be concluded that, the outcome of surgical procedures like simple derotation has got a high recurrence rate. Primary resection and end to end anastomosis stands out as the most satisfactory line of treatment with reasonably good results and the success rate in this study is 80%. Technically speaking, shortened period of transportation of the patient to the hospital, the early diagnosis, correction of fluid and electrolyte imbalance, suitable operation i.e. primary resection and end to end anastomosis performed with a perfect technique and meticulous postoperative follow up will aid in reducing the mortality rate.

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