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Outcome of patients with primary sclerosing cholangitis and ulcerative colitis undergoing colectomy

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Abstract---Background and Aim: Patients with ulcerative colitis (UC) are at risk of developing primary sclerosing cholangitis (PSC). As a form of continence preservation, ileal pouch-anal anastomosis or ileorectal anastomosis are used for patients undergoing colectomy. The present study aimed to determine the patient outcomes following colectomy for primary sclerosing cholangitis and ulcerative colitis. Patients and Methods: A total of 64 patients with PSC and UC undergoing colectomy were enrolled and investigated in the Department of Gastroenterology, Lady Reading Hospital, Peshawar from January 2018 to June 2020. Study protocol was approved by the institutional research and ethical committee. Patient's data regarding

clinical information, preoperative liver tests, colectomy date, pathological findings, and follow-up liver tests were reviewed from medical records. The colectomy leading indications such as colonic dysplasia, bowel perforation, and colonic inflammation etc. were recorded. Several preoperative tests were conducted, including total bilirubin, albumin levels, direct bilirubin and ALP. SPSS version 26 was used for data analysis. Results: The overall mean age was 40.42 ± 3.6 years. Of the total 64 patients, there were 42 (65.6%) male and 22 (34.4%) females. Colectomy was most commonly indicated by severe intestinal inflammation (52%), bowel perforations (4%), and dysplastic colons (38%). The incidence of postoperative complications were 43.8% (n=28). Anemia, acute bowel obstruction, wound infection, intra-abdominal abscess, and high ileostomy were prevalent complications found in 8 (12.5%), 4 (6.3%), 3 (4.7%), 3 (4.7%), and 2 (3.1%) respectively. Other complications such as fever, urinary retention, portal vein thrombosis, abdominal pain, and acute pancreatitis were found in 2 (3.1%), 3 (4.7%), 1 (1.6%), 1 (1.6%), and 1 (1.6%) respectively. During follow-up, the incidence of colorectal cancer and malignancies diagnosis was 9 (14.1%) and 9 (14.1%) respectively. The prevalence of colonic dysplasia was 38% (n=24), out of which high grade and low grade dysplasia were found in 18 (28.6%) and 6 (9.4%) respectively. Among the malignancies detected by this study, 4 were cholangiocarcinomas, 2 were hematologic malignancies, 1 was gallbladder cancer and 1 was hepatocellular carcinoma. Conclusion: The present study found that PSC and UC patients undergoing colectomy have a 12.5% death rate. The average ALP value was significantly greater than normal, while total bilirubin levels and direct bilirubin levels were within normal limits. The lower albumin levels and platelet counts in PSC patients were more susceptible to poorer outcome.

Keywords---colectomy, ulcerative colitis, primary sclerosing cholangitis, outcome.

Introduction

Fibrosis and inflammation in biliary tree characterized the primary sclerosing cholangitis (PSC) that might leads to end-stage liver disease [1]. Inflammatory bowel disease is significantly associated with PCS and their prevalence varies from 60% to 84% in European countries [2, 3]. Ulcerative colitis have been reported in majority of PSC with IBD patients [4]. First-degree relatives of PSC patients had a higher incidence of both PSC and UC, indicating a hereditary vulnerability [5]. PSC-IBD is distinguished by slower disease progression, a greater incidence of rectal sparing, backwash ileitis, pancolitis, and colorectal cancer increased risk [6]. Majority of advance PSC patients with milder IBD required liver transplantation (LT) as compared to colectomy [7]. UC colectomy needed patients had lower severity of PSC [8]. A previous investigation carried out on 45 PSC-IBD patients found that colectomy had no effect on liver function and hence had no effect on PSC-prognosis [9].

Previous study has revealed that colitis duration in individuals with PSC and UC differs from the UC alone. Although UC-PSC individuals might have pancolitis an increased risk, typical clinical history, despite the dysplasia and cancer higher risk [10]. As a result, the requirements for surgical therapy differ from those applicable just to UC patients. Considering the disease nature, UC and PSC disease are mostly caused by dysplasia [11]. Furthermore, UC-PSC patients had a greater rate of colectomy [12]. Alternative study observed the liver illness following proctocolectomy in PSC and UC patients [13]. Several factors must be considered for a patient with UC during pre-surgery counselling. The literature has extensive studies on many elements of UC patients exclusively, thus the main information may be reliably presented. Individuals with UC-PSC who require colectomy, on the other hand, are uncommon, and as a result, information on most characteristics of these patients is limited [14]. The current study aimed to evaluate the outcomes of individuals with UC-PSC following surgery.

Methodology

A total of 64 patients with PSC and UC undergoing colectomy were enrolled and investigated in the Department of Gastroenterology, Lady Reading Hospital, Peshawar from January 2018 to June 2020. Study protocol was approved by the institutional research and ethical committee. Patient's data regarding clinical information, preoperative liver tests, colectomy date, pathological findings, and follow-up liver tests were reviewed from medical records. The colectomy leading indications such as colonic dysplasia, bowel perforation, and colonic inflammation etc. were recorded. Several preoperative tests were conducted, including total bilirubin, albumin levels, direct bilirubin and ALP. PSC in individual was confirmed through following criteria: chronic cholestatic disease from six months, serum alkaline phosphate elevation, and extrahepatic biliary duct, operative, retrograde, and percutaneous resemble with PSC, and secondary sclerosing cholangitis exclusion. A health care practitioner used established guidelines to record a complete history and physical examination. The main outcome was the existence of liver transplantation requiring liver decompensation patients at 1 month and at the end of follow-up. The existence of post-operative liver issue such as hemorrhage, ascites, and liver failure that necessitated medical care was defined as the secondary end point. Elevated ALT, AST, and total bilirubin greater than normal value was defined as worsening liver tests. Hospitalization and postoperative complications were recorded. The existence or absence of primary endpoints was used to classify subjects. SPSS version 26 was used for data analysis. Quantitative variables were described as mean and standard deviation. Qualitative variables were represented as frequency and percentage. Independent t test was used for comparing the two groups. Qualitative variables were compared using Fisher's exact test by taking significance threshold set at P 0.05.

Results

The overall mean age was 40.42 ± 3.6 years. Of the total 64 patients, there were 42 (65.6%) male and 22 (34.4%) females. Colectomy was most commonly indicated by severe intestinal inflammation (52%), bowel perforations (4%), and dysplastic colons (38%). The incidence of postoperative complications were 43.8% (n=28).

Anemia, acute bowel obstruction, wound infection, intra-abdominal abscess, and high ileostomy were prevalent complications found in 8 (12.5%), 4 (6.3%), 3 (4.7%), 3 (4.7%), and 2 (3.1%) respectively. Other complications such as fever, urinary retention, portal vein thrombosis, abdominal pain, and acute pancreatitis were found in 2 (3.1%), 3 (4.7%), 1 (1.6%), 1 (1.6%), and 1 (1.6%) respectively. During follow-up, the incidence of colorectal cancer and malignancies diagnosis was 9 (14.1%) and 9 (14.1%) respectively. The prevalence of colonic dysplasia was 38% (n=24), out of which high grade and low grade dysplasia were found in 18 (28.6%) and 6 (9.4%) respectively. Among the malignancies detected, 4 were cholangiocarcinomas, 2 were hematologic malignancies, 1 was gallbladder cancer and 1 was hepatocellular carcinoma. Table-I represents the gender's distribution. Figure-1 depicts the most common indications of colectomy. Post-operative complications are illustrated in Figure-2. Figure-3 depicts the prevalence of colonic dysplasia. Baseline laboratory tests are shown in Table-II. The incidence of malignancies are shown in Figure-4.

Table-I Gender's distribution (n=64)

Gender	Frequency N	Percentage %
Male	42	65.6
Females	22	34.4
Total	64	100

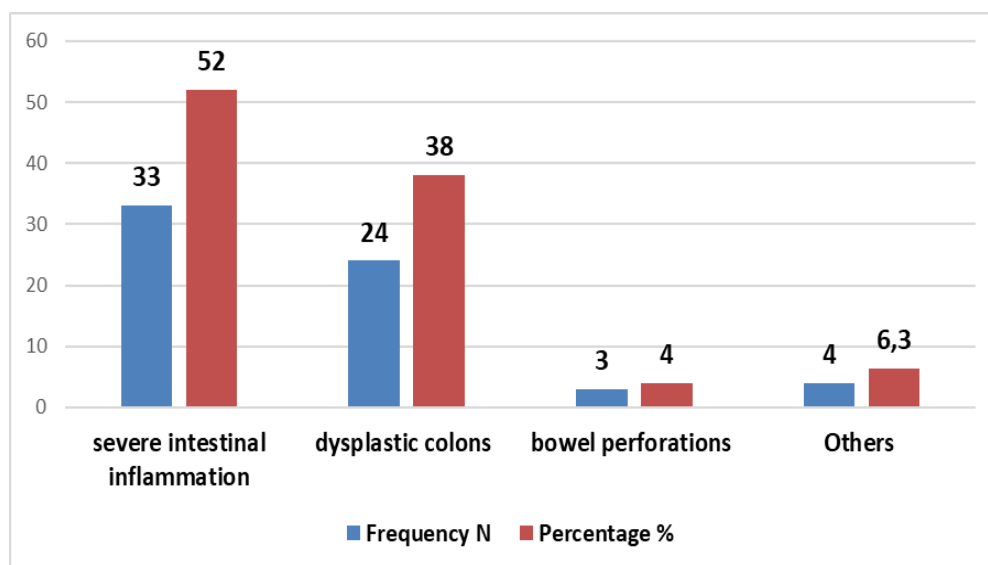


Figure-1 most common indications of colectomy (n=64)

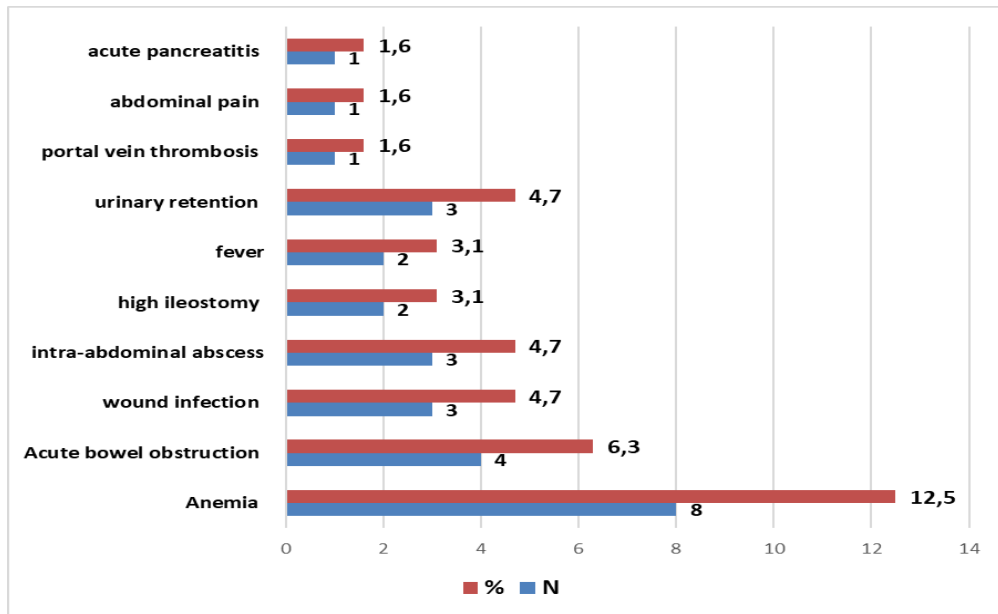


Figure-2 Post-operative complications (n=64)

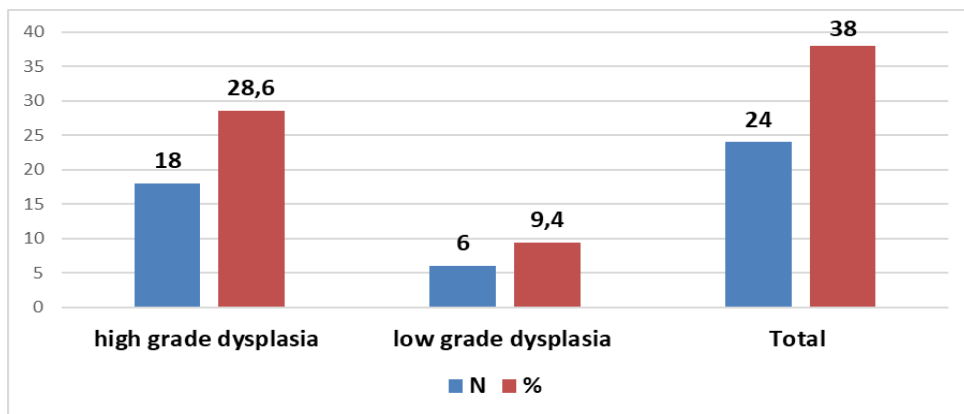


Figure-3 prevalence of colonic dysplasia (n=24)

Table-II Baseline laboratory tests findings

Laboratory parameters	Value
ALT (< 40 U/L)	71 (42, 124)
AST (< 40 U/L)	52 (30, 100)
ALP (U/L)	372 (192, 840)
Albumin (g/dL)	3.8 (3.2, 4.9)
Total bilirubin (mg/dL)	0.7 (0.5, 1.8)
Direct bilirubin (mg/dL)	0.3 (0.1, 0.8)
Glucose (mg/dL)	92.5 (85, 108)
Creatinine (mg/dL)	0.9 (0.8, 1.2)
Platelet ($\times 10^9/L$)	287 (202, 352)

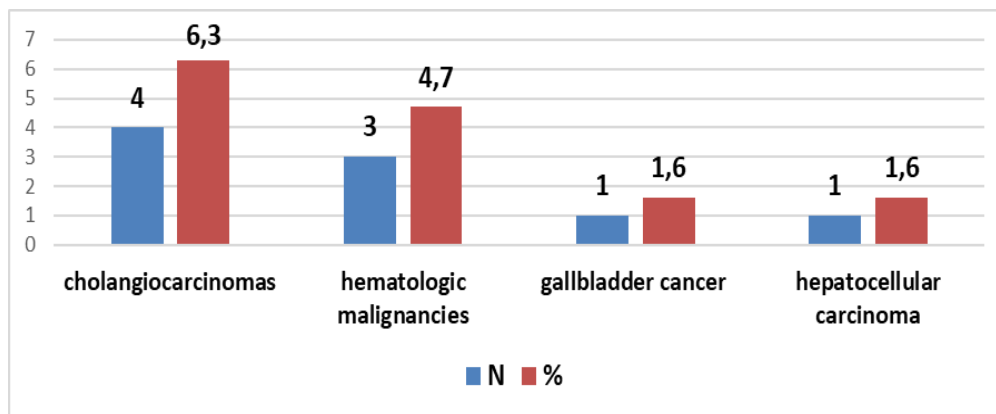


Figure-4 malignancies (n=9)

Discussion

The present study mainly focused on the outcome of PSC and UC patients undergoing colectomy and found that 12.5% of PSC and UC patients following colectomy died. The average ALP level was two times higher than usual, although total and direct bilirubin levels were within normal ranges. PSC individuals with lower platelet counts and albumin levels had a considerably poor outcome. Colectomy is not always result in a better prognosis for PSC-IBD patients. The postoperative mortality 4-fold risk after colectomy was reported in reduced liver function patients [15, 16] individuals with IBD-PSC may face an increased risk of early postoperative death after colectomy. Colectomy used for treating PSC and UC patients had poor survival rate [17]. Previously, 24 PSC patients underwent colectomy and the requirement for cirrhosis to be diagnosed before surgery [18]. The current study expands on prior research on the colectomy risk in individuals with UC and PSC.

A previous study found that LT needed patients underwent colectomy had higher mortality rate of 12% lower than the reported 12.5% in the present study [19]. According to their findings colectomy was a reliable, safe, and effective modality in considering the colorectal cancer reduced risk among patients before or after LT. The dormant colitis is the leading cause for 4% lower rate colectomy in PSC patients. Large duct was found in mostly PSC patients and could be the possible reasons for liver complications with poor prognosis [20].

A Japanese-based research [21] recently found post-LT UC and PSC patients had active colitis irrespective of immunosuppressive medicines, with a median gap of 6.5 years from liver transplantation to colectomy. Few studies found that at least 60% of PSC patients with UC had inactive or poorly controlled colitis following orthotropic liver transplantation [22, 23]. Furthermore, in the non-liver transplantation group, colon cancer and high grade dysplasia were more common, and showed colonic mucosa greater inflammation at histology [24]. Therefore, PSC severe progressive individuals who require LT should be treated for colitis which may minimize UC disease activity and the colectomy requirement [25].

A current research demonstrated that PSC-UC patients with colonic neoplasms were disseminated during colonoscopy of colon and were mostly located on the right side [26]. Consequently, individuals with PSC and UC should have surveillance colonoscopies and biopsies every year to two years [27]. There may be a decrease in incidence of colorectal cancer among UC patients [28]. Regardless of LT short-term risk, PSC diagnosis after colectomy, removal of the colon may have a favorable impact since it lowers the chance of colorectal cancer. Surgical complications are not uncommon following PSC and UC. The total rates reported ranges from 10% to 50% [29, 30]. Chapman et al. [31] found a cumulative complication rate of 39% after 6 years in a retrospective investigation, whereas Gelley et al. [32] found 46% after 6 years.

Conclusion

The present study found that PSC and UC patients undergoing colectomy have a 12.5% death rate. The average ALP value was significantly greater than normal, while total bilirubin levels and direct bilirubin levels were within normal limits. The lower albumin levels and platelet counts in PSC patients were more susceptible to poorer outcome.

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