Role of EUS in idiopathic ulcerative colitis

Dear Editor,

EUS enables measurement of transmural inflammation and activity endo-luminally in patients with inflammatory bowel disease (IBD). It enables measurements of mucosal thickness (MT), submucosal thickness (SMT), total wall thickness (TWT), and loss of intestinal wall stratification. Previously, few studies have shown utility of EUS in predicting the disease activity in patients with IBD. TWT has been found to be elevated in patients with active IBD compared to healthy controls.[1] Moreover, increased rectal wall thickness as measured by EUS has also been shown to predict disease relapse in patient with IBD.[2-5] However, these studies have been done mostly on patients with Crohn's disease and various EUS parameters have not been correlated with different disease activity or endoscopic activity. We conducted a prospective study to correlate various EUS parameters with clinical activity, endoscopic and histological scores in patients with ulcerative colitis (UC).

Consecutive patients with UC were prospectively included in study after taking informed and the study protocol was approved by the Institute Ethics Committee. The UC clinical activity was noted as per Truelove and Witts criteria and endoscopic activity was recorded according to Mayo endoscopic score.[6,7] Patients underwent rectal EUS examination followed by sigmoidoscopy/colonoscopy after standard oral polyethylene glycol preparation. Rectal EUS was done using radial scanning echoendoscope and the endosonologist was blinded to the clinical and endoscopic disease activity. The MT, SMT and TWT were noted [Figure 1]. The presence or absence of intestinal layer stratification was also recorded in all patients. All measurements were repeated three times in sigmoid colon to reduce sampling errors and mean value of the three values was taken as the final value.

Total of 48 patients (mean age: 40.9 ± 13.0 years; 31 males) of UC were studied. The mean TWT in patients with UC was 3.54 ± 1.22 mm with patients having clinically severe disease having significantly higher mean TWT (4.26 ± 1.26 mm) compared to patients in remission (2.87 ± 0.80 mm; $P < 0.05$) or patients having mild disease (3.1 ± 0.77 mm; $P < 0.05$). However, difference was not significant when it was compared to patients with moderate disease (3.62 ± 1.53 mm; $P > 0.05$). The correlation between TWT and clinical severity was significant ($P = 0.001$; correlation coefficient 0.453). Patients with severe disease endoscopically were also found to have higher mean TWT (4.51 ± 1.33 mm) compared to patients in remission (2.95 ± 0.45 mm; $P < 0.05$), patients with mild disease (2.62 ± 0.80 mm; $P < 0.05$) or patients with moderate disease (3.27 ± 0.74 mm; $P < 0.05$). Correlation between TWT and endoscopic severity was found to be significant ($P < 0.001$, correlation coefficient 0.551). The mean MT + SMT in patients with UC was 2.30 ± 0.95 mm with patients with clinically severe disease having significantly higher MT + SMT (2.88 ± 1.16 mm) compared to patients with mild disease (1.79 ± 0.52 mm; $P < 0.05$) The correlation between MT + SMT and clinical severity was found to be significant ($P = 0.008$, correlation coefficient 0.37). The mean MT + SMT was significantly higher in patients with endoscopic severe disease (2.94 ± 1.14 mm) compared to patients in remission (1.82 ± 0.53 mm; $P < 0.05$), patients with mild disease activity (1.89 ± 0.85 mm; $P < 0.05$) or patients with moderate disease activity (2.01 ± 0.47 mm; $P < 0.05$). MT + SMT significantly correlated with endoscopic severity ($P = 0.002$, correlation coefficient 0.439). Patients

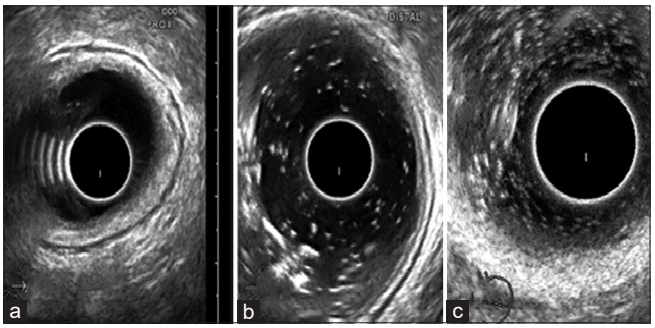

Figure 1. (a) EUS in patient with ulcerative colitis showing thickened mucosa and submucosa; (b) EUS in patient with ulcerative colitis showing thickened wall with preserved wall stratification; (c) EUS in patient with ulcerative colitis showing thickened wall with loss of wall stratification

in clinical remission (77.8%), mild disease (78.6%) or moderate disease (77.8%) were more likely to have preserved intestinal wall stratification compared to patients with severe disease (43.8%). However, this difference was not statistically significant and no significant correlation was not found between clinical severity and intestinal layer stratification ($P = 0.129$). However, patients with severe disease on endoscopic examination were more likely to have loss of intestinal stratification (64.7%) compared to patients with mild (20.0%) or moderate disease (11.8%) ($P < 0.05$). Loss of intestinal wall stratification correlated with endoscopic severity ($P < 0.05$; $r = 0.342$).

In conclusion, EUS guided measurement of TWT, mucosal and submucosal wall thickness and loss of intestinal wall stratification correlated well with clinical severity and endoscopic scoring in patients with UC. They may be also useful in judging depth of inflammation as well as response to therapy which requires further evaluation in a prospective studies.

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Conflicts of interest
Surinder S. Rana is an Editorial Board Member of Endoscopic Ultrasound. The article was subject to the journal's standard procedures, with peer review handled independently of this Member and his research groups. There are no other conflicts of interest.

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