USE OF TRANSABDOMINAL COLOR DOPPLER ULTRASOUND FOR DETECTION OF COLON CANCER IN PATIENTS WITH NONSPECIFIC ABDOMINAL SYMPTOMS: A PERSONAL EXPERIENCE AND META-ANALYSIS OF THE LITERATURE

Tarle Bajić N. 1 Bajić I. 2
Private Family Practice, Petrinjska 52, 10000 Zagreb, Croatia, E-mail: ultrazvuk.tarle@gmail.com, www.ultrazvuk-tarle.hr, Tel/Fax 00385 1 48 40 813

Objective
The objective of this study was to demonstrate the place of Transabdominal color Doppler ultrasound (TCDU) in the diagnosis of colon cancer and confirmation of colon cancer through colonoscopy.

Materials and methods
Patients: 335 examined patients (180 women and 155 men aged 40-86 years old: mean±standard deviation [SD], 63±23).
Inclusion criteria: Patients with nonspecific symptoms were reviewed: abdominal pain (93.6%), abdominal distention (84.89%), constipation and/or diarrhea (53.1%), loss of appetite (36.2%), fatigue (41.15%), vomiting (17.4%) and weakness (23%).
Exclusion criteria: We excluded patients who had clinical signs of inflammation or a blood test that showed increased white blood cells, granulocytes, or CRP and patients with bleeding from the colon with hematochezia or melena.

Image presentation

Fig. 1. Colon cancer in descending colon Initial stage of colon cancer in the transversing colon and initial part of the descending colon. Figure A presents the focal lesion columns displayed with power Doppler. This lesion does not have the typical appearance of a "target pattern".

Fig. 2. Colon cancer in sigmoid colon (Dukes B)

Fig. 3. Colon cancer in ascending colon (Dukes C)

Fig. 4. Colon cancer in sigmoid colon (Dukes D)

Fig. 5. Misdiagnosis. Focal lesion in ascending colon (hematoma while anticoagulant therapy)

In this research, TCDU presented a sensitivity of 94.99%, specificity of 95.59%, a PPV of 82.35%, and an NPV of 98.89%. We have compared results in three independent studies: specifically Martinez et al. (2005), Chen et al. (2006), and our study. The results suggested that significantly higher incidence of the colorectal cancer could be successfully found through ultrasound examination (Mantel-Haenszel, Robins-Breslow-Greenland) pooled odds ratio (OR)=204.9 (95% CI=106.4 to 394.5), Chi² (testing whether OR differs from 1)=717.4; p<0.001.

Results

Patients with nonspecific symptoms screened with TCDU n=331

Detected focal lesion in colon n=90/331 (27.29%)

Not detected focal lesion in colon n=241/331 (72.71%)

Confirmed colon cancer with colonoscopy n=56/331 (16.9%)

Not confirmed colon cancer n=22/331 (6.67%)

Detected rectal cancer n=7/331 (2.13%)

Fig. 6. The number of focal lesions detected with TCDU in the colon and the results after colonoscopy.

Fig. 7. Forest plot: effectiveness of ultrasound diagnostics of colorectal cancer found in different studies

Conclusion
The overall conclusion of this study is that in patients who have nonspecific symptoms such as distension and abdominal pain, TCDU should be the first choice in examination of the abdomen, followed by further diagnostic evaluation if needed.