

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

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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: 331 examined patients (180 women and 151 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 distension (84.89%) , constipation and/or diarrhea (53.1%), loss of appetite (36.2%), fatigue (31.1%), vomiting (27.4%) and weakness (25%).

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

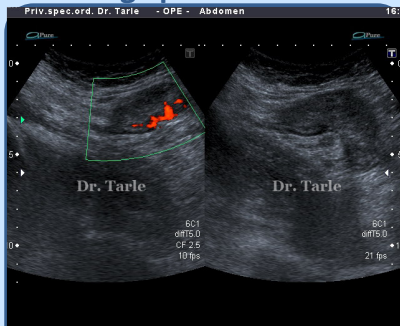


Fig.1. Colon cancer in descending colon
Initial stage of colon cancer in the transversing colon and initial part of the descending colon. Figure A presents the focal lesion columns displayed with power Doppler, This lesion does not have the typical appearance of a "target pattern" .

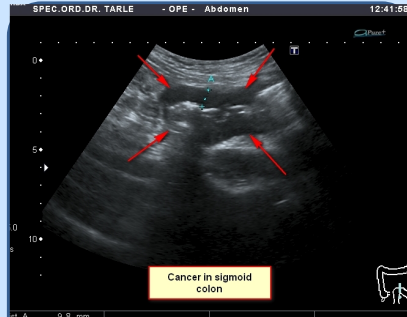


Fig.2. Colon cancer in sigmoid colon (Dukes B)

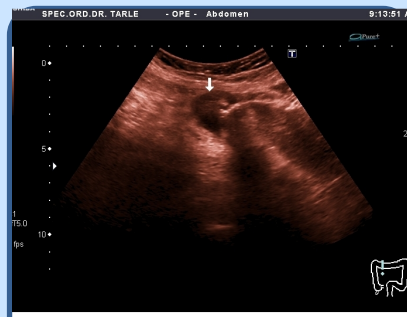


Fig.3. Colon cancer in ascending colon (Dukes C)

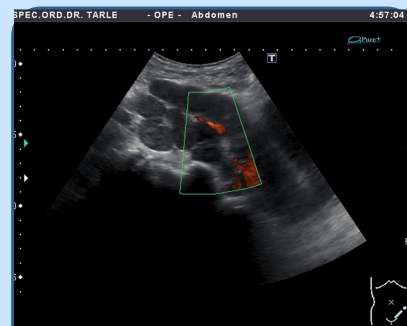


Fig.4. Colon cancer in sigmoid colon (Dukes D)

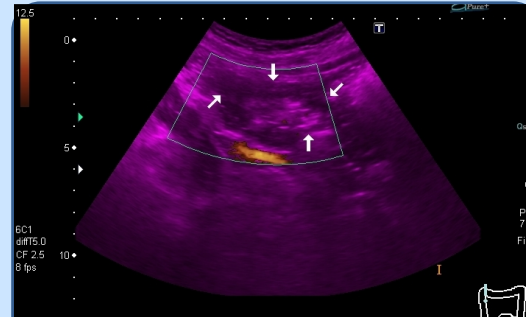


Fig. 5. Misdiagnosis. Focal lesion in ascending colon (hematoma while anticoagulant therapy)

Results

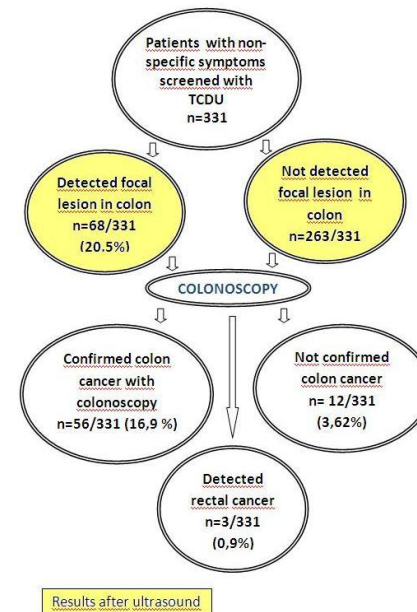


Fig.6. The number of focal lesions detected with TCDU in the colon and the results after colonoscopy.

In this research, TCDU presented a **sensitivity of 94.9%**, **specificity of 95.59%**, a **PPV of 82.35%**, and an **NPV of 98.86%**. 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)**, χ^2 (testing whether OR differs from 1)=717.4; $p<0,001$.

Meta-analysis

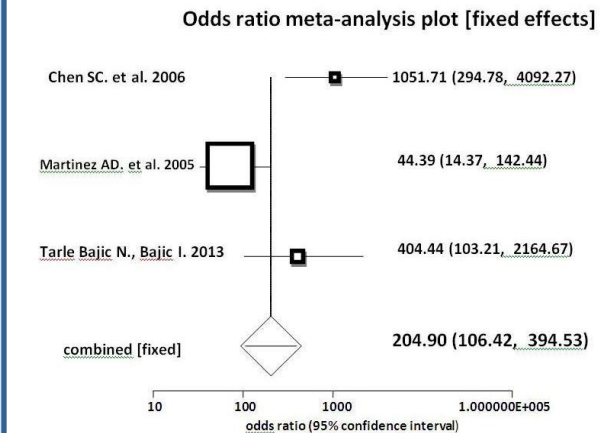


Fig.7. Forest plot: effectiveness of ultrasound diagnostics of colorectal cancer found in different studies

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.