

COLOGUARD®: WHAT THE TALKING BOX IS NOT TELLING US

INSIGHTS INTO A POSITIVE COLOGUARD® RESULT



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

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Background

Colon cancer is the third leading cause of cancer death in the United States with an estimated 148,000 new cases in 2020. The rate of colon cancer dropped by 34% between 1999 and 2016[i][ii]. The reduction in the incidence of colon cancer is attributed to increased screening. The multitarget stool DNA (MTsDNA) Cologuard® test is a recommended modality for colorectal cancer (CRC) screening in average-risk individuals. However, published data on MTsDNA use and colonoscopic findings for evaluation of a positive MTsDNA in community practice is limited.

Methodology

We conducted a cross-sectional study using data from a large community gastroenterology practice for a 5 year period between June 2016 and May 2021. We compared findings on colonoscopy for patients referred for evaluation of a positive MTsDNA to a control group of average-risk individuals who underwent screening colonoscopy during the same time period without antecedent MTsDNA testing. We used an independent sample t-test assuming unequal variances for the comparison of findings between the groups. A logistic regression model was used to analyze the relationship between patient characteristics and the finding of an Advanced Adenoma in the MTsDNA positive group.

Table 1: Characteristics of Participants

Measure	MTsDNA Positive Patients (n=703) n (%)	Average Risk Screening Patients(n=24774) n (%)
Sex		
Male	272 (38.7)	10857 (43.8)
Female	431 (61.3)	13917 (56.2)
Age		
< 50	0 (0)	682 (2.8)
50 - 59	76 (10.8)	11650 (47)
60 - 69	219 (31.2)	8944 (36.1)
70 - 79	336 (47.8)	3407 (13.8)
80 +	71 (10.1)	91 (0.4)
Race		
Caucasian	675 (96)	21423 (86.5)
African-American	10 (1.4)	854 (3.4)
Hispanic or Latino	2 (0.3)	0 (0)
American Indian	5 (0.7)	90 (0.4)
Unknown	9 (1.3)	1969 (7.9)
All Others	16 (2.3)	438 (1.8)
Family History		
Family History	125 (17.8)	0 (0)
Use of Anticoagulants		
Current	80 (11.4)	

Table 2: Colonoscopic Findings on Multitarget Stool DNA Test Positive Patients Compared with Average Risk Screening Patients

Findings	MTsDNA Positive(n=703) n (%)	Average Risk Screening(n=24774) n (%)
Negative	155 (22)	11256 (45.4)
Non-Advanced Polyp		
Adenomatous Polyp	237 (33.7)	11023 (44.5)
Sessile Serrated Polyp	111 (15.8)	3602 (14.5)
Advanced Adenoma	184 (26.2)	1491 (6)
Adenocarcinoma	14 (2)	97 (0.4)
Colonoscopy Metrics		
Withdrawal Time, Min(SD)	13 (7.92)	10 (11.48)
Bowel Prep Adequate	438 (96)	24024 (97)

References

[i]U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute.
[ii]US Preventative Services Task Force (USPSTF) CRC Screening Recommendation (2016).
[iii]Imperiale T. Multitarget stool DNA testing for colorectal-cancer screening. N Engl J Med. 2017; 370: 1287-1297.

Acknowledgements

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Results

During the study period, we identified 703 MTsDNA positive patients and 24,774 average risk controls. The MTsDNA positive patients were older and more likely to be female and caucasian (Table 1). Twenty-five percent (176) of patients evaluated for positive MTsDNA tests were at a greater than average risk for colon cancer based on family history and personal history of polyps. The median withdrawal time for the MTsDNA positive group was 3 minutes longer than the screening colonoscopies (13 vs 10 min, p < 0.05). The MTsDNA positive group had a higher prevalence of non-advanced adenomas, sessile serrated polyps, advanced adenomas, and adenocarcinomas compared to the average risk screening findings (Table 2). Use of anticoagulants in MTsDNA positive patients led to no statistically significant difference in colonoscopy findings. The logistic regression model showed that patient age, sex, BMI, smoking status, and family history of colon cancer were not significantly associated with the finding of an Advanced Adenoma in MTsDNA positive patients. Personal history of precancerous polyps was significantly associated with the finding of an advanced adenoma in the logistic regression analysis (p < 0.05).

Conclusions

The positive predictive value for CRC in patients with a positive MTsDNA test in this large community practice sample was 2%. Thus, the finding of CRC is uncommon in patients who undergo colonoscopy for a positive MTsDNA test. Findings of any type of precancerous lesions were more common in MTsDNA positive patients. Advanced adenomas are lesions with a moderate or greater likelihood to progress to CRC. The ability of MTsDNA to detect advanced adenomas was less than 50% in the original study leading to FDA approval[iii]. In this study, a positive MTsDNA test led to the finding of an advanced adenoma in 26% of patients. Physicians spent more time examining the colonic mucosa when the indication was a positive MTsDNA test.

- The MTsDNA test is intended for use in patients of average risk for CRC. However, 25% of patients in the MTsDNA positive group were not at average risk for CRC based on having a family history of CRC or personal history of polyps or cancer.
- Patients who have a history of colon polyps are more likely to harbor an Advanced Adenoma.
- Inappropriate use of MTsDNA testing in higher-risk individuals suggests a need for better education for ordering physicians. The low rate of CRC in persons undergoing colonoscopy could also help alleviate anxiety in patients once a positive result is found.