

Association of Fecal Immunological Test with the risk of gastroesophageal cancer within a population with an intermediate risk for cancer

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WHAT IS KNOWN

- ❖ The current guidelines do not recommend upper endoscopy for patients with a positive **Fecal Immunological Test** and **non-explainable colonoscopy**
- ❖ The risk for gastroesophageal cancer varies widely across populations and depends on multiple variables
- ❖ Some reports, especially among the Asian population, report a positive association between a positive FIT and gastroesophageal cancer

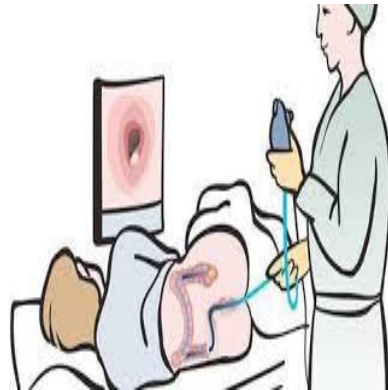
AIM

We evaluated the association of fecal Immunochemical test (FIT) results with the risk of gastroesophageal cancer (GEC) within a population classified as an intermediate risk for cancer

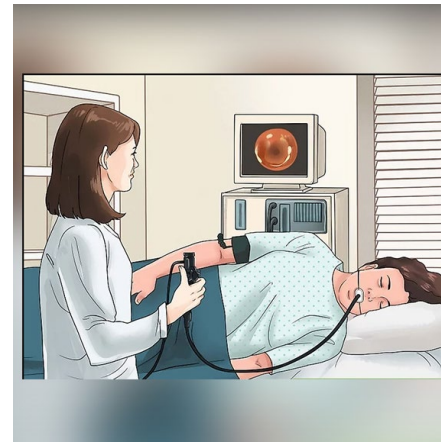
Positive FIT



Non-explainable colonoscopy



Upper endoscopy ?



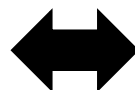
METHODS

Subjects aged 50-75 who **performed FIT** (Sentinel Gold, at a threshold $<75\text{mgr/ml}$) within the Clalit Health between 1.8.2016 to 1.8.2017

Follow-up Cancer Registry, death, up to 30.12.2021

Colorectal cancer (CRC)

Gastroesophageal cancer (GEC)



FIT Positivity

Demographic data

Lab: Hemoglobin ($<6\text{m}$)

Drugs issued ($<6\text{m}$)



RESULTS I

Performed FIT: N=279,811; Positive FIT=21,319 (7.6%)

Follow-up Cancer Registry, death, up to 30.12.2021

FIT Positivity



Performance of FIT

Age-sex AdjHR

Sensitivity

Specificity

Positive predictive value

Subjects needed to scope

CRC

N=1,082

0.4% of total cohort

9.87 (8.75-11.1)

46.2 (43.6-49.2)

92.5 (92.4-92.6)

2.31 (2.15-2.56)

46.2 (43.6-49.2)

GEC

N=300

0.11% of total cohort

1.75 (1.25-2.43)

13.7 (10.2-18.0)

92.5 (92.4-92.6)

0.20 (0.14-0.26)

500 (384-714)

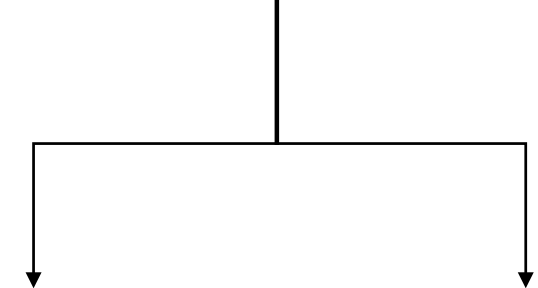
RESULTS II

Factors associated with the risk of Gastroesophageal cancer (Cox)

		Unadjusted HR	P	Adjusted HR	P
		HR (95%CI)		HR (95%CI)	
FIT result	Negative	1 (Ref)		1 (Ref)	
	Positive	1.97 (1.42-2.74)	<.001	1.59 (1.14-2.21)	0.002
Age FIT, years	Median, IQR	1.08 (1.06-1.09)	<.001	1.06 (1.04-1.08)	<.001
Sex	Female	1 (Ref)		1 (Ref)	
	Male	1.88 (1.50-2.37)	<.001	1.56 (1.21-2.01)	0.001
Country of birth	Israel	1 (Ref)		1 (Ref)	
	Former USSR	2.40 (1.84-3.4)	<.001	2.00 (1.52-2.63)	<.001
	Asia	2.14 (1.30-3.54)	0.003	1.64 (0.99-2.73)	0.056
	Africa	1.12 (0.79-1.60)	0.497	0.83 (0.58-1.19)	0.299
	Other	1.60 (0.91-2.83)	0.101	1.41(0.80-2.63)	0.238
			<.001		<.001
Smoking status	Never	1 (Ref)		1 (Ref)	
	Current/past	1.53 (1.21-1.93)	<.001	1.31 (1.03-1.66)	0.029
Anemia*	No	1 (Ref)		1 (Ref)	
	Yes	2.72 (2.15-3.43)	<.001	2.26 (1.77-2.88)	<.001
PPI*	No	1 (Ref)		1 (Ref)	
	Yes	2.38 (1.89-3.00)	<.001	1.97 (1.55-2.49)	<.001

RESULTS III

Anemia*		Unadjusted HR	P	Adjusted HR	P
No	Yes	HR (95%CI)		HR (95%CI)	
		1 (Ref)		1 (Ref)	
		2.72 (2.15-3.43)	<.001	2.26 (1.77-2.88)	<.001



Performance of FIT

	CRC N=1,082	GEC N=300	GEC Anemia N=115	GEC No anemia N=185
Age-sex AdjHR	9.87 (8.75-11.1)	1.75 (1.25-2.43)	1.96 (1.20-3.20)	1.61 (1.03-2.52)
Sensitivity	46.2 (43.6-49.2)	13.7 (10.2-18.0)	16.5 (10.8-24.4)	11.9 (7.9-17.3)
Specificity	92.5 (92.4-92.6)	92.5 (92.4-92.6)	90.7 (90.5-90.9)	92.9 (92.8-93.0)
Positive predictive value	2.31 (2.15-2.56)	0.20 (0.14-0.26)	0.39 (0.25-0.61)	0.14 (0.09-0.21)
Subjects needed to scope	46.2 (43.6-49.2)	500 (384-714)	256.4 (163.9-400)	714 (1,111-4,761)

Conclusions

- ❖ In this retrospective study performed within a population with an intermediate risk for GEC that performed FIT in the CRC screening program, we report that FIT-positive and non-explainable colonoscopy subjects may be at increased risk of GEC.
- ❖ The number of subjects needed to scope ranged from 256 for subjects with anemia to 714 for subjects without anemia.
- ❖ As multiple factors are associated with the risk of GEC, a personalized risk model may help the provider identify subjects that will most benefit from upper endoscopy.

Disease	FIT result	No Cancer	Cancer	N/10 ⁵	Sensitivity (95% CI)	Specificity (95% CI)	PPV (95% CI)	NPV (95% CI)	SNS (95%CI)	HR (95% CI)	AdjHR# (95% CI)
CRC		278,408	1,082	38.7							
	Negative	257,636	582	22.5	46.2	92.5	2.31	99.7	43.3	1.00 (Ref)	1.00 (Ref)
	Positive	20,772	500	235	(43.6-49.2)	(92.4-92.6)	(2.15-2.56)	(99.7-99.8)	(39.1-46.5)	10.6 (9.41-11.9)	9.87 (8.75-11.1)
GEC		278,408	300	10.8							
	Negative	257,636	259	10.0	13.7	92.5	0.20	99.9	500	1.00 (Ref)	1.00 (Ref)
	Positive	20,772	41	19.7	(10.2-18.0)	(92.4-92.6)	(0.14-0.26)	(92.3-92.5)	(384-714)	1.97 (1.42-2.74)	1.75 (1.25-2.43)
<i>Stratified by the presence of anemia</i>											
No Anemia	Negative	210,211	163	7.7	11.9	92.9	0.14	99.9	714	1.00 (Ref)	1.00 (Ref)
	Positive	15,915	22	13.8	(7.9-17.3)	(92.8-93.0)	(0.09-0.21)	(99.9-99.9)	(1,111-4,761)	1.75 (1.12-2.72)	1.61 (1.03-2.52)
Anemia	Negative	47,425	96	20.2	16.5	90.7	0.39	99.8	256.4	1.00 (Ref)	1.00 (Ref)
	Positive	4,857	19	38.9	(10.8-24.4)	(90.5-90.9)	(0.25-0.61)	(99.7-99.8)	(163.9-400)	1.96 (1.20-3.20)	1.77 (1.08-2.90)
SBC		278,408	21	0.8							
	Negative	257,636	15	0.6	28.6	92.5	0.029	99.9	3,448	1.00 (Ref)	1.00 (Ref)
	Positive	20,772	6	2.9	(13.8-49.0)	(92.4-92.6)	(0.013-0.063)	(99.9-100)	(1,587-7,692)	4.98 (1.93-12.8)	4.71 (1.82-12.2)

&Sentinel Gold at a threshold of 75 ng/ml;#Age-sex adjusted; GEC: Gastroesophageal cancer; SBC: Small bowel Cancer; CRC: Colorectal cancer; FIT: Fecal Immunochemical Test; PPV: Positive Predictive Value; NPV: Negative Predictive Value; NNT: Number Needed to Treat; HR: Hazard Ratio (95% confidence interval).