

**ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΠΡΟΓΡΑΜΜΑ
 (NBI) ΜΕ ΜΑΓΝΙΦΙΚΑΝΤΗ ΚΟΛΟΝΟΣΚΟΠΙΑ
 ΓΙΑ ΤΗ ΒΕΛΤΙΩΣΗ ΤΗΣ ΔΙΑΓΝΩΣΤΙΚΗΣ
 ΑΚΡΙΒΕΙΑΣ ΤΗΣ ΕΡΕΥΝΑΣ**

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**EVALUATION OF NARROW-BAND IMAGING (NBI) WITH
 MAGNIFICATION COLONOSCOPY FOR IMPROVING THE
 DIAGNOSTIC ACCURACY OF THE INVESTIGATION**

ABSTRACT

In last years many new endoscopic methods, as well as NBI have been introduced with aim to improve the diagnostic accuracy of colonoscopy. The data for their utility to be introduced in the routine clinical practice are not enough yet. The aim of this study was to evaluate the advantages of NBI with magnifying endoscopy compared to conventional colonoscopy for improving the diagnostic accuracy of endoscopic investigation. We analyzed the results of 330 patients with single or multiple (up to 5) colonic lesions found during standard colonoscopy (n=1530), and by magnifying NBI (n=2329 Olympus Exera 180). With the use of magnifying endoscopy 799 new lesions were found, mainly benign lesions with size < 5 mm (p<0.001). Early cancer or high grade dysplasia was found in 4 new diagnosed lesions (total n=104), and low-grade – in 12 (total n=318). There was a significant correlation between the histological diagnosis and pit pattern of colonic mucosa according to the classification of S. Kudo et al. (p<0.001), as well as the type of microvascular architecture, applying the classification of Y. Sano et al. (p<0.001). The diagnostic accuracy of NBI magnifying colonoscopy for prediction of the histological changes, evaluating the pit pattern type and type of capillary vessels was 92% and 96% for invasive adenocarcinoma, 95% and 87% - for early cancer or high-grade dysplasia, and between 95 - 100% - for benign lesions, respectively. In conclusion, NBI magnifying endoscopy is a promising method for the diagnosis of small colon lesions, especially for those with size less than 5 mm, and for the differentiation between neoplastic and non-neoplastic colon lesions, as well as the lesions with low-grade and high grade dysplasia or early colorectal carcinoma. In addition, it allows distinction of noninvasive from the invasive cancer.

(5,20).

(< 5 mm), (, NBI) (1,2,4,5, 8,16,19,22). (1,2,11,22). (5,11,12). (5,11,19,22, 23).

Öäë

(6,19, 22,23).

ÌÀÒÁÐ ÈÀË È ÌÀÒÌÄ È

-106, 330 (-224,
60.2 ± 12.8),
(5)

Olympus Exera 180.

S. Kudo

(1994 1996),

(. 1, . 1)

Y. Sano

(2005), (. 2 .2) , (9,10,14).

160

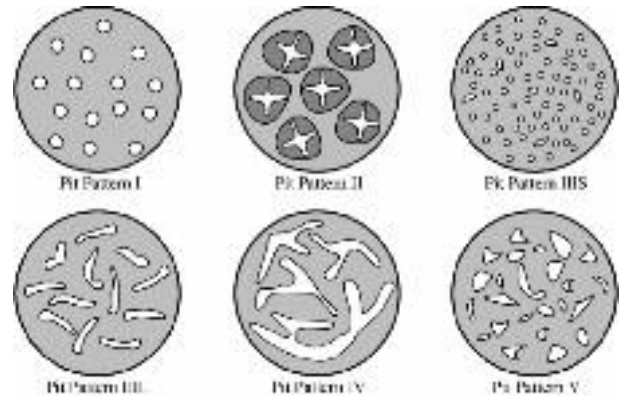
I.

(„Pit pattern“

S. Kudo

. 1994 1996, 9,10).

Òèr yìèè	Õàðàéòáðèñ òèèà
I	
II	
III S	I) (-
III L	I) (-
IV	
V	(I), - (N)



I.

(„Pit pattern“
. 1994 1996, 9,10)

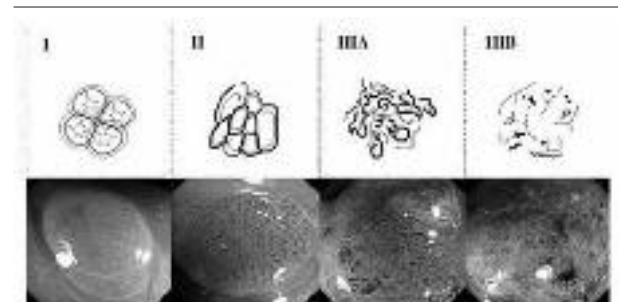
S. Kudo

2.

. 2005,14).

(Y. Sano

Òèr èàrèèyòè	Õàðàéòáðèñ òèèà
I	" - "
II	" - "
III	+ " " -
III A	" - "
III B	"



2.

(Y. Sano

., 2005, 14)

ΔΑΦΟΕΩΛΟ

1530, 3.9± 3.4.
 ()
 - - 76%
 (n=1163),
 21% (n=321) 3% (n=46).
 : - - 65%
 , 18% colon descendens, 12% colon
 transversum colon ascendens, 5% c ecum.
 ? 1 cm
 459 (30%), 1071 (70%) - 1 cm, <1
 mm - 158, 1 3 mm - 170, 3 5 mm - 414,
 5 9 mm - 329.
 , 78% (n=1194)
 - (n=270),
 (n=587) - (n=337), 20%
 (n=306) - / .
 30 (2%).
 (n=100)
 (n=83) 12%
 (n=183), - 20% (n=306)
 799
 2329.
 (5 mm),
 / , (<0.001).
 : <1 mm - 426,
 268 2.7 ; 1- 3 mm - 336,
 166 2.0 ; 3-5 mm - 688,
 274 1.7 ; 5-9 mm - 420,
 91 1.3 (3).
 1 m .
 - 459. /
 306 718
 (412 2.3), - 1194
 1333 (139 1.1),
 - 30 278 (248 9.2
), (.4).
 4
 104 ,
 - 12 318.

Y. Sano . 2005, 14), (<0.001, . 4).

3. ()
 (S. Kudo ., 1994 1996,
 9,10).

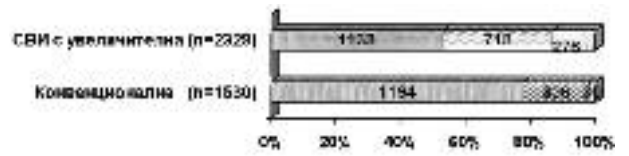
Όνοματεπώνυμο	Όχι γιέλα ή οδιάαε ή ιόεφαοά					
	I	II	III	III	IV	V
(n=83)			4		3	76
/ (n=104)	-	2	2	4	93	3
(n=318)	-		105	5	193	16
(n=1333)	-	15	196	535	580	7
(n=718)	16	688	-	14	-	-
(n=278)	65	201	-	7	5	-

4. () (Y. Sano . 2005, 14).

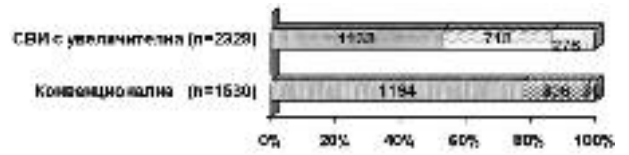
Όνοματεπώνυμο	Όχι εαεεγυόλαοά ή άαεά			
	I	II	III	III
(n=83)	-	-	3	80
/ (n=104)	2	90	12	-
(n=318)	-	312	6	-
(n=1333)	3	1327	3	-
(n=718)	710	8	-	-
(n=278)	274	4	-	-

S. Kudo ., 1994 1996, 9-10), (<0.001, . 3),

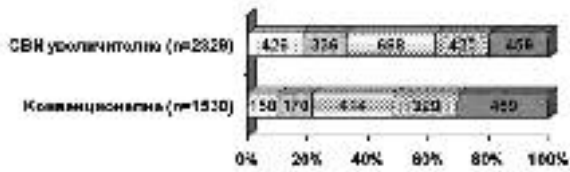
1.	() -	-	-
	-8.4%	3.8%;	-
	-0%	0%;	-
	-91.6%	96.4%	-
2.		-	-
	-1.9%	0.5%;	-
	-2.95%	12.6%;	-
	-95.2%	86.6%	-
3.		-	-
	-0%	0%;	-
	5.0%	1.9%;	-95%
			98.1%
4.	/		-
	-0%	0%;	-
	-0%	0%;	-100%
	100%		-
5.		-	-
	-0%	0%;	-
	-4.3%	0%;	-
	95.7%	100%	-
6.	--		-1.1%
	0.2%;		-0.5%
			0.2%;
		-98.4%	99.3%



4 .



4 .



□ <1mm □ 1-3mm □ 3-5mm □ 5-9mm □ >10mm
3 .

ΙΑΝÚÆÄÄÍA

(5, 7,22,23).

(19,22,23).

90%
(19,21,22),

(6,11).

1.9 52%.

2.7

1 mm , 2 , 1.7 1.3 ,
1 3 mm, 3-5 mm 5-9 mm.

m .

1

9.2

), / (2-3

4 - 12

96%, (5,7,8,21,23). I II

1 mm (92, 95), III V -

90%, 97%, 95), II

(1,2,13,21,22,23). (100%) (75%) III V

83%, 44%), (23). V

(3,5).

(17,18).

(22).

2 (7). (7,17,18,21).

401

(22). II - III -

Sano .., 2005, IIIA/ IIIB,

„Pit pattern“ S. Kudo

.., 1994 1996), Y. Sano .., 2009,

2005) (Y. Sano pM pSM1 pSM2-3, 87.7% (87%),

(17,18). IIIA

IIIB -

III

(7,17,18,21).

Â çàèþ-àíèà

5 mm,

ΕΞΕΛΑΞΜΕΝΑ

1. Anandasabapathy S. Endoscopic Imaging: Emerging Optical Techniques for the Detection of Colorectal Neoplasia. *Curr Opin Gastroenterol.*, 24, 2008, 1, 64-69.
2. ASGE American Society for Gastrointestinal Endoscopy, Technical Committee. Chromoendoscopy. *Gastrointest Endosc.*, 66, 2007, 4, 639-649.
3. East JE, Suzuki N, von Herbay A, Saunders BP. Narrow band imaging with magnification for dysplasia detection and pit pattern assessment in ulcerative colitis surveillance: a case with multiple dysplasia associated lesions or masses. *Gut*, 55, 2006, 10, 1432-5.
4. Häfner M, Gangl A, Kwitt R, Uhl A, V csei A, Wrba F. Improving pit-pattern classification of endoscopy images by a combination of experts. *Med Image Comput Assist Interv.*, 12, 2009, Pt , 247-54.
5. Hirata M, Tanaka S, Oka S. Et al. Magnifying endoscopy with narrow band imaging for diagnosis of colorectal tumors. *Gastrointestinal Endoscopy*, 65, 2007, 7, 988-995.
6. Hoffman A, Kagel C, Goetz M et al. Recognition and characterization of small colonic neoplasia with high-definition colonoscopy using i-Scan is as precise as chromoendoscopy. *Dig Liver Dis.*, 42, 2010, 1, 45-50.
7. Ikematsu H, Matsuda T, Emura F et al. Efficacy of capillary pattern type IIIA/IIIB by magnifying narrow band imaging for estimating depth of invasion of early colorectal neoplasms. *BMC Gastroenterol.* 2010, 10, 33.
8. Katagiri A, Fu KI, Sano Y, Ikematsu H, Horimatsu T, Kaneko K, Muto M, Yoshida S: Narrow band imaging with magnifying colonoscopy as a diagnostic tool for predicting the histology of early colorectal neoplasia. *Aliment Pharmacol Ther*, 27, 2008, 12, 1269-1274.
9. Kudo, S, Hirota, S, Nakajima, T, et al. Colorectal tumors and pit pattern. *J Clin Pathol*, 47, 1994, 880-5.
10. Kudo, S, Tmura, S, Nakajima, T, et al. Diagnosis of colorectal tumorous lesions by magnifying endoscopy. *Gastrointest Endosc*, 44, 1996, 8-14.
11. Pellisé M, Lopez-Cer n M, Rodríguez de Miguel C et al. Narrow-band imaging as an alternative to chromoendoscopy for the detection of dysplasia in long-standing inflammatory bowel disease: a prospective, randomized, crossover study. *Gastrointest Endosc.*, XX, 2011, 10, 1-9.
12. Rex DK. Update on Colonoscopic Imaging and Projections for the Future. *Clin Gastroenterol Hepatol.*, 8, 2010, 4, 318-321.
13. Rey JF, Kuznetsov K, Lambert R. Narrow band imaging: A wide field of possibilities. *Saudi J Gastroenterol* 2007, 13, 1-10.
14. Sano Y, Muto M, Tajiri H et al. Optical/digital chromoendoscopy during colonoscopy using narrow-band image system. *Dig. Endosc.*, 2005, 17, S43-8.
15. Sano Y, Horimatsu T, Fu KI, Katagiri A, Muto M, Ishikawa H: Magnifying observation of microvascular architecture of colorectal lesions using a narrow band imaging system. *Digest Endosc* 2006, 18, S44-51.
16. Sano Y, Yoshida S: Optical chromoendoscopy using NBI during screening colonoscopy: usefulness and application. In *Advanced digestive endoscopy: comprehensive atlas of high resolution endoscopy and narrowband imaging*. Edited by: Cohen J. Oxford: Blackwell Publishing; 2007, 123-148.
17. Sano Y, Emura F, Ikematsu H: Narrow band imaging. In *Colonoscopy: principles and practice*. Edited by: Wayne J, Rex D, Williams C. Oxford: Blackwell Publishing; 2009, 514-526.
18. Sano Y, Ikematsu H, Fu KI, Emura F, Katagiri A, Horimatsu T, Kaneko K, Soetikno R, Yoshida S. Meshed capillary vessels using narrow band imaging for differential diagnosis of small colorectal polyps. *Gastrointest Endosc*, 69, 2009, 2, 278-283.
19. Sato T. Image-enhanced endoscopy. *Techniques in Gastrointestinal Endoscopy*, 2011, 13, 2-7.
20. Shehab H. Chromoendoscopy in gastroenterology. *Arab Journal of Gastroenterology*, 11, 2010, 1, 3-17.
21. Togashi K, Osawa H, Koinuma K, et al. A comparison of conventional endoscopy, chromoendoscopy, and the optimal-band imaging system for the differentiation of neoplastic and non-neoplastic colonic polyps. *Gastrointest Endosc*, 69, 2009, 734-41.
22. van den Broek FJ, Reitsma JB, Curvers WL, Fockens P, Dekker E. Systematic review of narrow-band imaging for the detection and differentiation of neoplastic and nonneoplastic lesions in the colon (with video). *Gastrointest Endosc*. 2009, 69, 1, 124-35.
23. Yeung TM, Mortensen NJ. Advances in endoscopic visualization of colorectal polyps. *Colorectal Dis.*, 13, 2011, 4, 352-9.