

DIAGNOSTIC ACCURACY  
OF VIRTUAL CHROMOENDOSCOPY  
WITH NARROW BAND IMAGING (NBI)  
FOR THE CLASSIFICATION OF POLYPOID  
AND NON-POLYPOID LESIONS  
IN ULCERATIVE COLITIS:

A PROSPECTIVE STUDY USING  
DIFFERENT ENDOSCOPIC  
CLASSIFICATIONS

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# Background

## Studi controllati/randomizzati con NBI nella sorveglianza in colite ulcerosa (detection / characterization)

Author, Published Year	No. of Patients	Study Design	Setting	IEE	Endoscopy Compared	Indication	Main Outcomes	P Value for Comparison	
Dekker et al, <sup>35</sup> 2007	42	Randomized crossover trial	UC surveillance	NBI	WLE	Dysplasia detection	Suspicious lesions, NBI 52 vs WLE 28 True-positive lesions, NBI 9 vs WLE 12 False-positive lesions, NBI 43 vs WLE 16	.026 .672 .015	●
Matsumoto et al, <sup>36</sup> 2007	46	Cross-sectional study	UC surveillance	NBI	WLE	Dysplasia differentiation	Positive rate of dysplasia, tortuous pattern (4/50 sites, 8%) vs honeycomblike or villous patterns (1/246 sites, 0.4%)	.003	●
Van den Broek et al, <sup>44</sup> 2008	50	Randomized crossover trial	UC surveillance	AFI NBI	WLE AFI	Dysplasia detection Dysplasia differentiation	Neoplasia miss rates, AFI 0% vs and WLE 50% AFI (sensitivity 100%) vs NBI (sensitivity 75%, specificity 81%)	.036	●
Matsumoto et al, <sup>43</sup> 2010	48	Prospective study	UC surveillance	AFI	WLE	Dysplasia detection	Positive rate of dysplasia, protrusions (30%) vs flat mucosa (3.3%) Positive rate of dysplasia in flat lesions, low AF (8.2%) vs high AFI (0%)	<.0001 .3	●
Pellise et al, <sup>37</sup> 2011	60	Randomized crossover trial	UC surveillance	NBI	WLE with indigo carmin	Dysplasia detection	Suspicious lesions, NBI 136 vs WLE 208 True-positive lesions, NBI 10 vs WLE 12 False-positive lesions, NBI 126 vs WLI 196	.001 .644 .001	●
van den Broek et al, <sup>38</sup> 2011	48	Randomized crossover trial	IBD surveillance	NBI	WLE	Dysplasia detection	True-positive lesions, NBI 13 vs WLE 11	.727	●
Ignjatovic et al, <sup>41</sup> 2012	112	Parallel randomized trial	UC surveillance	NBI	WLE	Dysplasia detection	True-positive lesions, NBI 5 vs WLE 7 False-positive lesions, NBI 12 vs WLI 4	.57 .06	●
Efthymiou et al, <sup>42</sup> 2013	144	Randomized crossover trial	UC surveillance	NBI	WLE	Dysplasia detection	Suspicious lesions, NBI 102 vs WLE 131 True-positive lesions, NBI 20 vs WLE 23	<.001 .18	●



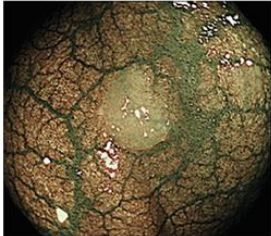


Strumenti senza  
magnificazione

Criteria diagnostici  
poco chiari



# Background

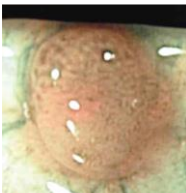
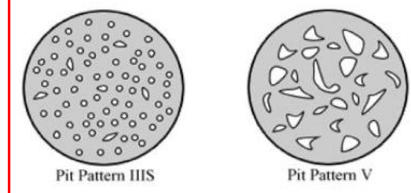
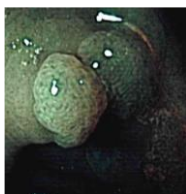
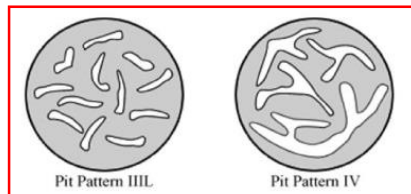
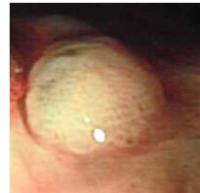
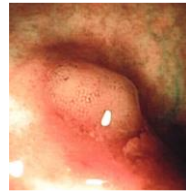
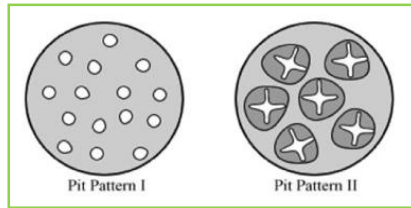
- **Classificazione NICE** (NBI International Colorectal Endoscopic classification)

	Type 1	Type 2	Type 3
<b>Color</b>	Same or lighter than background	Browner relative to background (verify color arises from vessels)	Brown to dark brown relative to background; sometimes patchy whiter areas
<b>Vessels</b>	None, or isolated lacy vessels may be present coursing across the lesion	Brown vessels surrounding white structures**	Has area(s) of disrupted or missing vessels
<b>Surface pattern</b>	Dark or white spots of uniform size, or homogeneous absence of pattern	Oval, tubular or branched white structures** surrounded by brown vessels	Amorphous or absent surface pattern
<b>Most likely pathology</b>	Hyperplastic & sessile serrated polyp (SSP) ***	Adenoma****	Deep submucosal invasive cancer
<b>Endoscopic image</b>			

# Background



La **classificazione di Kudo** è l'unica usata con NBI nelle IBD, ma è stata criticata nel contesto delle IBD per sensibilità e specificità imperfette



autore	disegno	N pts/lesioni	SE	SP	NPV
Lv JCG 2019	Meta-analisi	938	64%	74%	n.d.
Vleugels JCC 2018	Subanalisi di RCT	210/307	76.9%	n.d.	96.9%
Bisshchops GIE 2017	Non controllato (immagini)	27/50	77%	68%	88%
Efthymiou IBD 2013	RCT crossover	44/144	42%	n.d.	n.d.
Van den Broek Endoscopy 2011	RCT crossover	48/16	76%	66%	n.d.

(n.b.: attività clinica/endoscopica sempre esclusa)



# Background

- **Classificazione di Kudo modificata (FICE)** -> 3 modificatori del rischio di neoplasia:



	SE	SP	+LR	-LR
<b>Kudo</b>	91%	76%	3.8	0.11
<b>Kudo modificata</b>	91%	<b>93%</b>	12.8	0.09

# Metodi

- Studio prospettico, osservazionale, monocentrico
- Pazienti consecutivi con CU sottoposti a sorveglianza endoscopica per malattia di lunga data (almeno 8 anni dall'esordio)
- NBI (Exera II CV180)
- Biopsie mirate di tutte le lesioni visibili o resezione endoscopica di lesioni sospette per neoplasia



NICE  
Kudo  
Kudo-modificata

Sensibilità  
Specificità  
Positive likelihood ratio  
Negative likelihood ratio

Istologia =  
reference test

# Risultati (1)

## Pazienti e metodi

- **84** pazienti (62%M; età media 57, range 30-79 aa), 38 endosc. attivi
- **394** lesioni visibili (diam medio 6 mm, range 2-40 mm)
  - Is=327, Ip=5, Ila= 52, Ilb = 10
- **21** lesioni neoplastiche (**5%**) (20 LGD, 1 HGD)
- **49** lesioni iperplasiche (**12%**)
- **324** lesioni infiammatorie (**82%**)

# Risultati (2)

## Prevalenza dei patterns NICE e istologia

Tipo	N° lesioni (N, %)	Lesioni displasiche (N, %)
NICE 0	31 (8%)	0 (0%)
NICE 1	212 (54%)	5 (2%)
NICE 2	121 (31%)	11 (9%)
NICE 3	30 (7%)	5 (17%)



# Risultati (3)

## Prevalenza dei pattern di Kudo e istologia

Pit-patterns	N° lesioni (N, %)	Lesioni displasiche (N, %)
0 (non classificabile)	29 (8%)	0 (0%)
Kudo I	159 (40%)	0 (0%)
Kudo II	107 (27%)	6 (6%)
Kudo III-L	93 (24%)	14 (15%)
Kudo III-s	0 (0%)	0 (0%)
Kudo IV	6 (2%)	1 (17%)
Kudo V	0 (0%)	0 (0%)

# Risultati (4)

## Accuratezza diagnostica

	SE	SP	+LR	-LR
NICE	76% (53-92)	55% (50-60)	1.69 (1.3-2.2)	0.43 (0.2-0.94)
Kudo convenzionale	71% (48-89)	69% (65-74)	2.34 (1.71-3.19)	0.41 (0.21-0.81)
Kudo modificata	86% (64-97)	<b>79%</b> (75-83)	<b>4.15</b> (3.19-5.41)	0.18 (0.06-0.51)

$p=NS$

$p<0.05$   
Kudo-mod  
vs both  
Kudo and  
NICE

$p<0.05$   
Kudo-mod  
vs both  
Kudo and  
NICE

$p=NS$

# Conclusioni

- L'accuratezza diagnostica di NBI nella diagnosi ottica di lesioni neoplastiche e non neoplastiche è bassa quando usata secondo le classificazioni convenzionali della popolazione non IBD, ma può essere significativamente migliorata dalla Kudo modificata, specifica per CU
  - > specificità per le lesioni non neoplastiche, più frequenti
  - la sensibilità aumenterebbe con strumenti HD/magnificati?
- La classificazione di Kudo modificata ha un ruolo anche con NBI senza magnificazione, come già con FICE + magnificazione
- Il ruolo di NBI nella sorveglianza della CU dovrebbe essere ridiscusso in relazione a più rigorosi e plausibili criteri diagnostici e testato con strumenti di ultima generazione



To be continued...

grazie