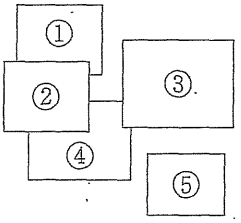
Colon and Rectum

General Theory : How to Observe These Regions with NBI or BLI

Case Atlas

Cover

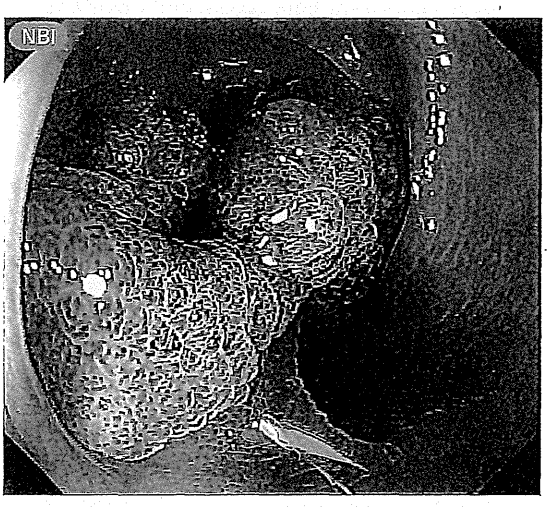
①② Hattori, S., et al. (p. 206, 207)
③ Yoshida, N., et al. (p. 212)
④ Goda, K., et al. (p. 53)
⑤ Kato, M., et al. (p. 106)



Case 52 Protruding serrated adenoma

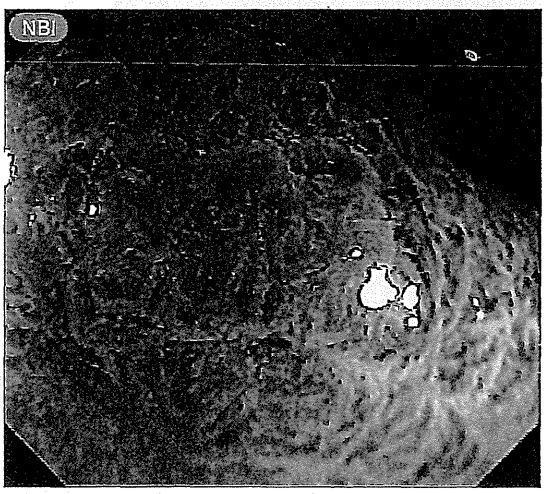
Female in her 60s *Purpose* Screening *Location* Sigmoid colon *Macroscopic type* 0－Ⅰs＋Ⅱa

WLI normal observation：A 40 mm lesion composed of an elevated, protruding erythematous component (Ⅰs) and a pale-colored slightly elevated component (Ⅱa) is observed.

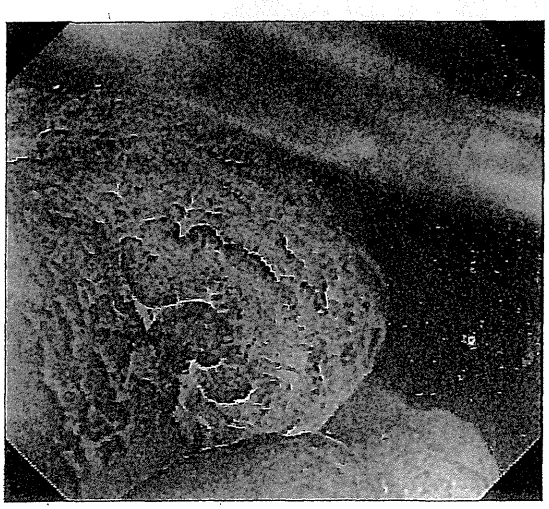


NBI non-magnifying observation：The Ⅰs area is freely mobile. The color of the Ⅰs area is slightly brownish while that of the Ⅱa area is whitish. The ELITE system of bright NBI makes it possible to assess a relatively large lesion such as this one in a single field of view.

NBI magnifying observation：Although the evaluation of microvessels is difficult, the surface pattern is clearly visible. The visible surface pattern does not present irregularities in the margin, so the presence of type III_L or Ⅳ pits is likely.

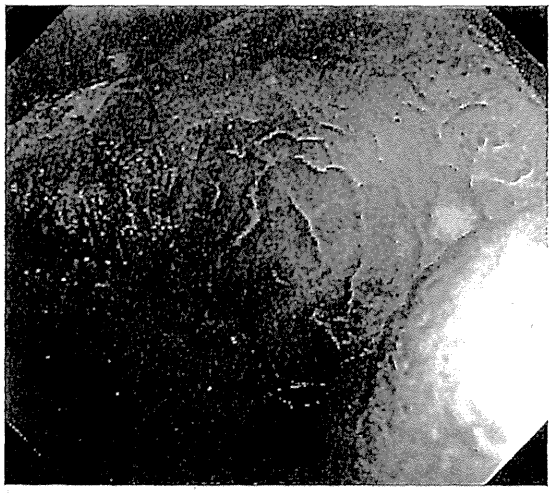


NBI magnifying observation of another area：The microvessels are visible in this region but overall lesion evaluation is difficult. The surface pattern is also visible as in the previous image, but the individual pit-like structures look relatively irregular.

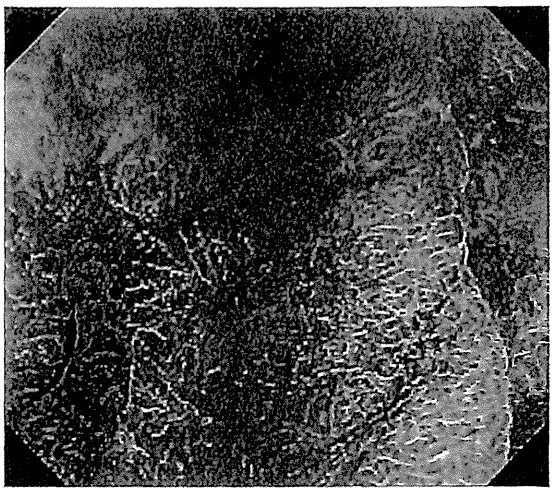


Magnifying observation after crystal violet staining：There is a region in which the pits look like branching type Ⅳ pits at first glance but, because of fine, jagged irregularities found on the margin, the region is a fern-like region (with type III_H pits).

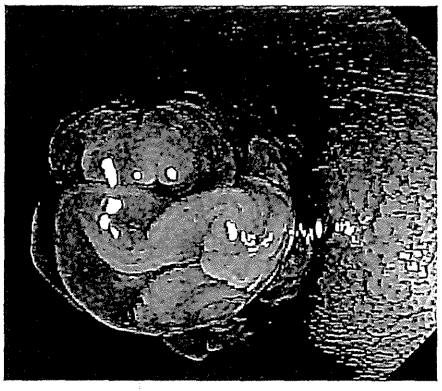
Endoscope : CF-FH260AZI (Olympus)　Light source : EVIS LUCERA ELITE (Olympus)
NBI setup : Structure enhancement A8, color mode 3



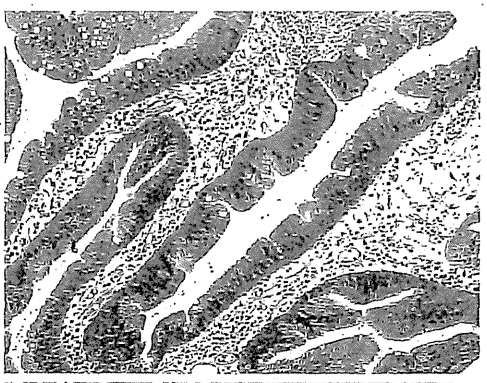
There is another region in which jagged irregularities are found on the margin of the gyrate, or type Ⅳ pits. These pits are not typical but judged to be type $\mathrm{Ⅳ_H}$ pits which are predictive of traditional serrated adenoma.



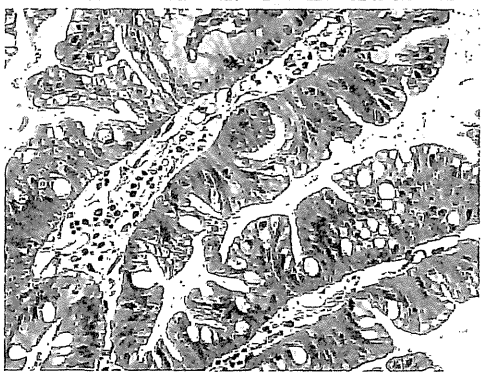
In the Ⅱa area, the irregularities similar to those described above are observed with both type $\mathrm{Ⅲ_L}$ type $\mathrm{Ⅲ_H}$ pits present.



[Reference (image of previous system)] With a pineal pattern and fine irregularities observed partially on the margin of the coating epithelium, the pits are judged to be typical type $\mathrm{Ⅳ_H}$ pits.



Histopathological image (HE stained) : As interstitial budding is recognized, the lesion is diagnosed as a traditional serrated adenoma (TSA).



Histopathological image (high magnification, HE stained) : The same findings are observed as the reference image.

Comment

The endoscopic assessment of this lesion demonstrates the lesion is composed mainly of branching type Ⅳ pits and focally with type $\mathrm{Ⅲ_H}$ or atypical type $\mathrm{Ⅳ_H}$ pits and that the pathology is predicted to be a TSA. The lesion was treated by en bloc resection by ESD and the final diagnosis was a serrated adenoma.

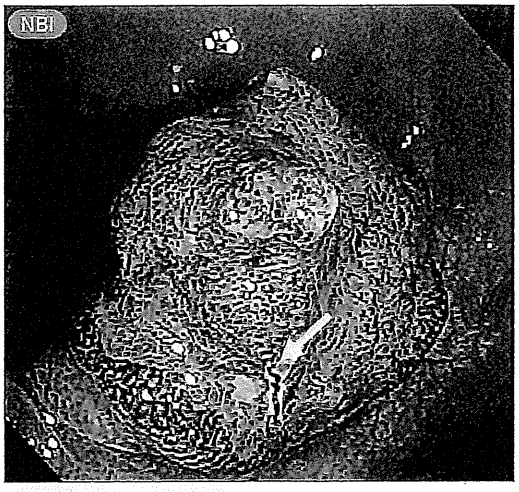
Observation tips It is hard to diagnose a TSA based only on the microvascular findings in NBI magnifying observation. The surface pattern seems to show that irregularities are observed in the pit-like structure somewhat similar to a typical tubular adenoma. There is currently a lack of evidence to define the typical magnifying NBI findings to establish a diagnosis of traditional serrated adenoma. The diagnosis of a serrated lesion requires detailed assessment of pit pattern. If crystal violet staining is used, it is possible to observe type $\mathrm{Ⅲ_H}$ and $\mathrm{Ⅳ_H}$ pits. Whilst these patterns may be recognized by with indigo carmine dye spraying, crystal violet staining is recommended for precise diagnosis.

(Sakamoto, T., Nakajima, T., Matsuda, T., Saito, Y.)

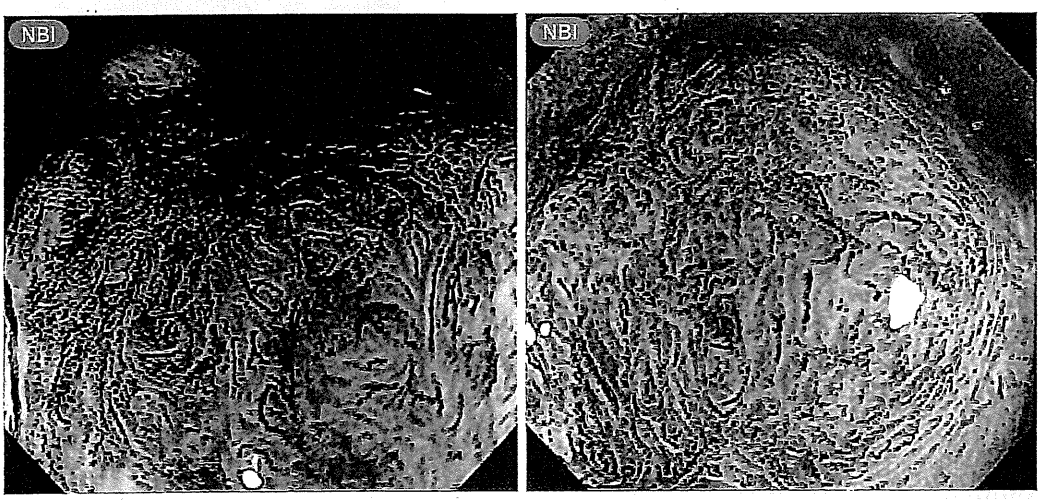
Case 65 Composite (Ⅰs+Ⅱc) SM carcinoma

Male aged 70 *History of present illness* The total colonoscopy after positive fecal occult blood test discovered a colorectal tumor, and the case was referred to our hospital for detailed examination and treatment. *History of previous illness* No appreciable disease *Location* Sigmoid colon *Macroscopic type* 0-Ⅰs+Ⅱc

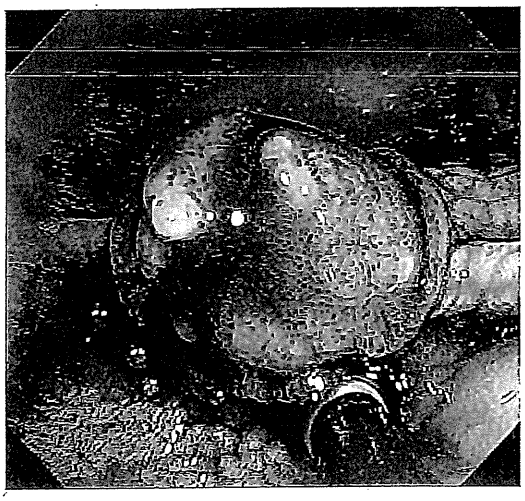
An erythematous protruding lesion is recognized in the sigmoid colon. It is a 0-Ⅰs+Ⅱc lesion with a size of 12 mm, mainly composed of a protruding component with surface irregularities, as well as a well-demarcated depression on the margin.



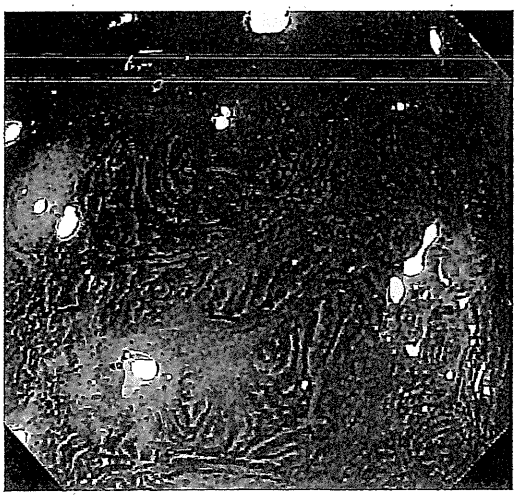
NBI observation : An elevated area of non-neoplastic mucosa is recognized on the tumor margin. The growth pattern seems to be of the NPG type. A thick vessel is recognized inside the depression (arrow).



NBI magnifying observation : Microvessels with irregular dimensions are meandering through the area in an irregular pattern. As the vascular arrangement is also irregular and the density is low, the lesion is diagnosed as Sano Classification Type ⅢB.



Indigo carmine chromoendoscopy : The depression is imaged more clearly.

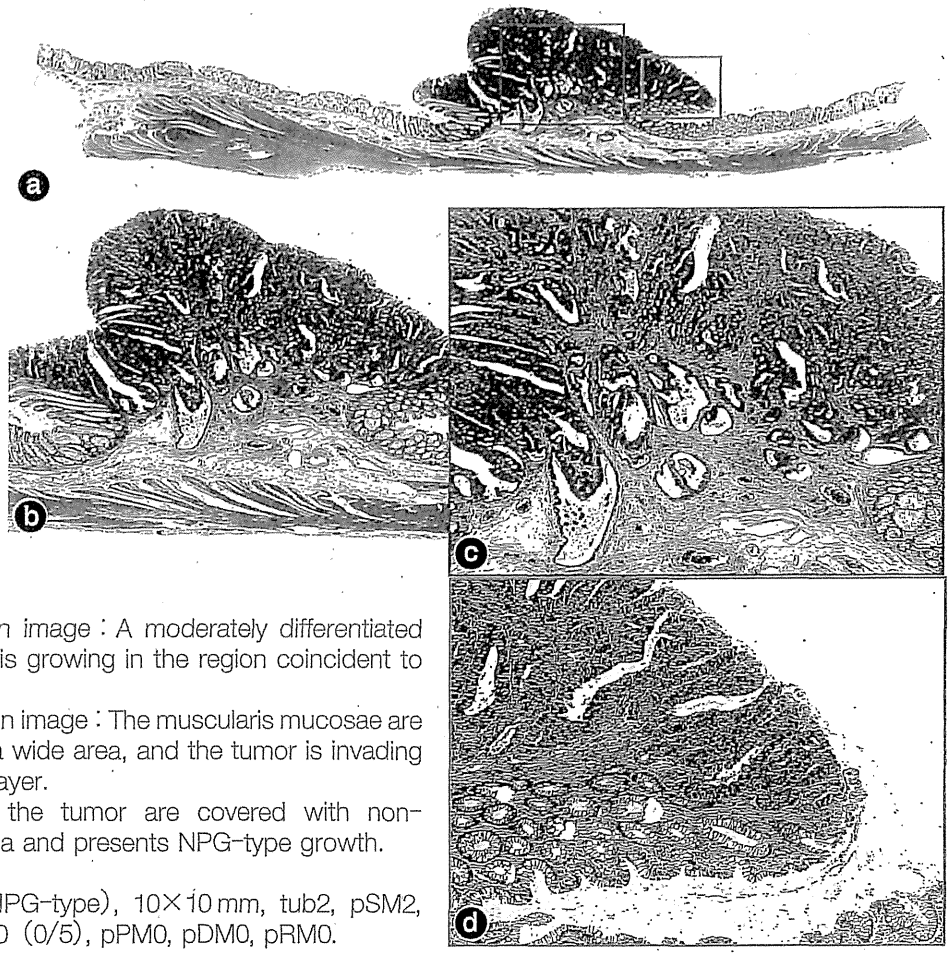


Crystal violet magnifying chromoendoscopy : Pit patterns with irregular margins and variable sizes are observed in the region coincident to the depression. As the arrangement is also irregular, it is diagnosed as a Ⅵ pattern (invasive pattern).

Endoscope : CF-H260AZI (Olympus)　Light source : EVIS LUCERA ELITE (Olympus)
NBI setup : Structure enhancement A8, color mode 3.

<Endoscopic diagnosis> The lesion is diagnosed as S/C, 0-Ⅰs+Ⅱc (NPG-type), 12 mm, cT1 (SM), and subjected to surgical resection.

<Treatment> Laparoscopic sigmoid colectomy.



a : Magnified image.
b : Low-magnification image : A moderately differentiated adenocarcinoma is growing in the region coincident to the lesion.
c : High-magnification image : The muscularis mucosae are ruptured across a wide area, and the tumor is invading the submucosal layer.
d : The margins of the tumor are covered with non-neoplastic mucosa and presents NPG-type growth.

<Diagnosis>
S/C, 0-Ⅰs+Ⅱc (NPG-type), 10×10 mm, tub2, pSM2, INFβ, ly0, v0, ne0, pN0 (0/5), pPM0, pDM0, pRM0.

Comment

This case is a 12 mm-sized lesion in the sigmoid colon that consists mainly of a protrusion. It has noticeable height irregularities on the surface and a well-demarcated depression. A steep elevated area composed of non-neoplastic mucosa is recognized on the margins, so the lesion seems to present NPG-type growth. The lesion is suspected to involve deep SM infiltration and exposure of SM carcinoma on the surface based on the surface irregularities observed in the normal observation and the NPG-type growth morphology. As irregular microvessels with irregular arrangement and pit patterns with various sizes and irregular arrangement recognized in NBI magnifying observation and crystal violet magnifying chromoendoscopy are typical findings of the Sano Classification Type ⅢB architecture and the Ⅴ1 pit pattern (invasive pattern) respectively, a highly invasive SM cancer is suggested.

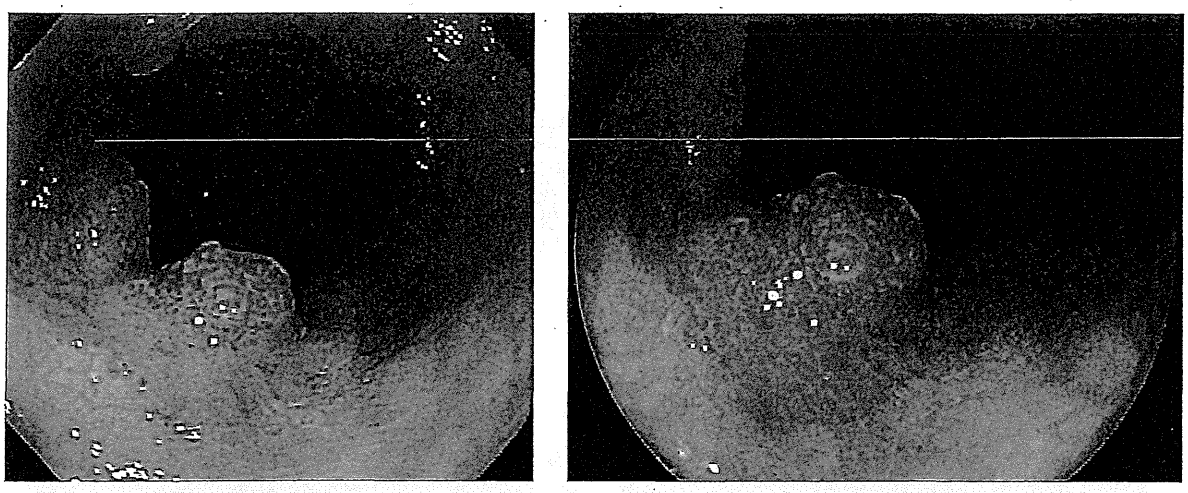
Observation tips The Sano Classification Type ⅢB architecture and the Ⅴ1 pit pattern (invasive pattern) recognized in NBI magnifying observation and magnifying chromoendoscopy respectively convinced us that the lesion was a highly invasive SM cancer, so laparoscopic sigmoidectomy was indicated. With a lesion that has non-neoplastic mucosa on the rising part of the lesion, a depression with localized property and clear elevation of the depression, it is relatively easy to diagnose a highly invasive SM cancer in normal observation (including indigo carmine chromoendoscopy) stage. Even when a protruding lesion looks like a 0-Ⅰs lesion at first glance, it is important to observe the irregularities on the protruding surface and the NPG-type growth pattern accurately to avoid making a mistake with the invasion depth diagnosis.

(Sato, C., Matsuda, T., Saito, Y.)

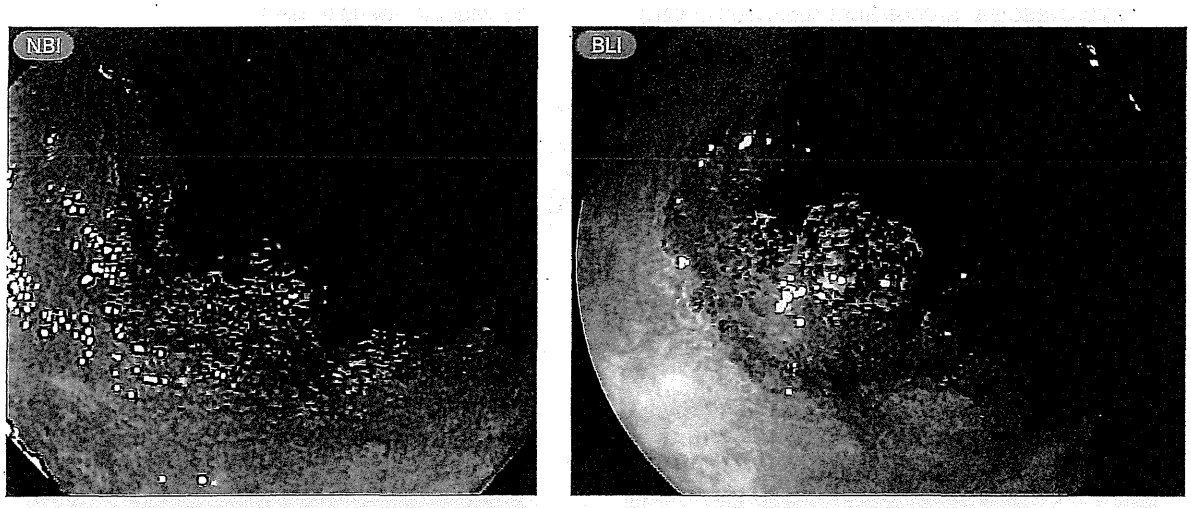
Case 70 LST-NG, pseudo-depressed type

—Comparison of NBI/BLI observations

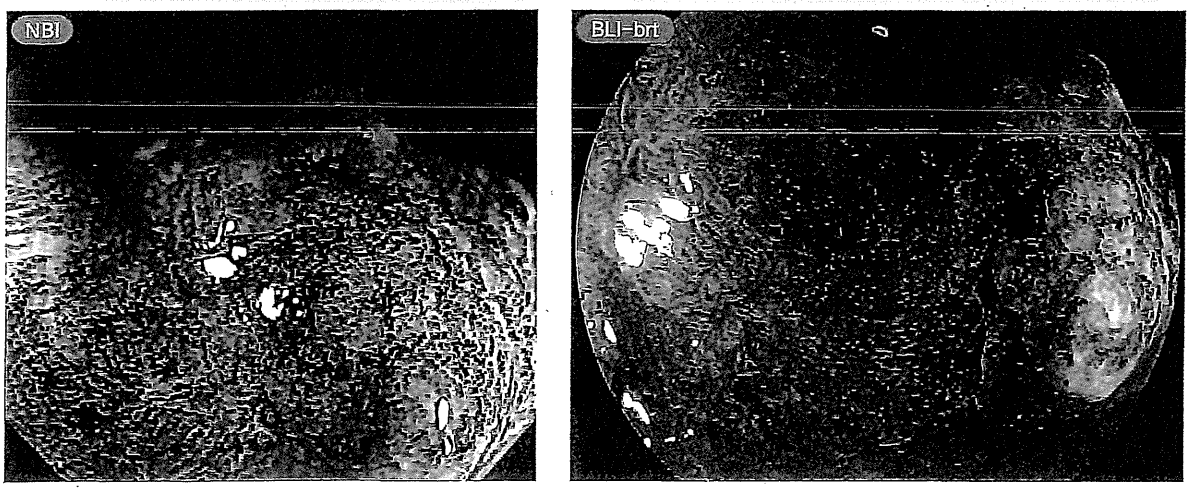
Female in her 70s *Purpose* Detailed examination after epigastric pain and body weight loss
Location Sigmoid colon *Macroscopic type* 0-Ⅰs+Ⅱa, LST-NG (PD)



WLI normal observation : A flat elevated lesion with a size of 35 mm is recognized. In the center of the lesion, an erythematous nodule taller than the surrounding area is observed. White dots are found on the lesion margin.

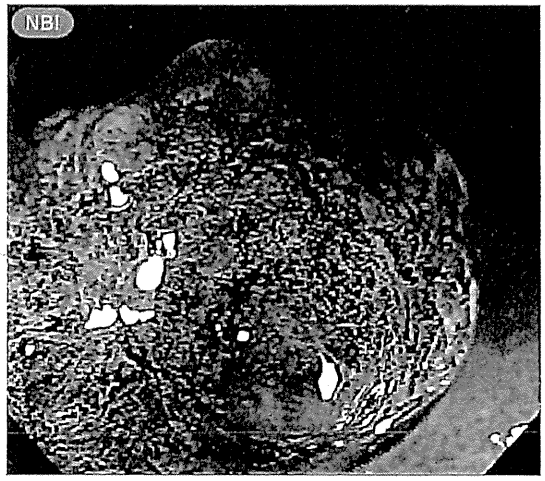


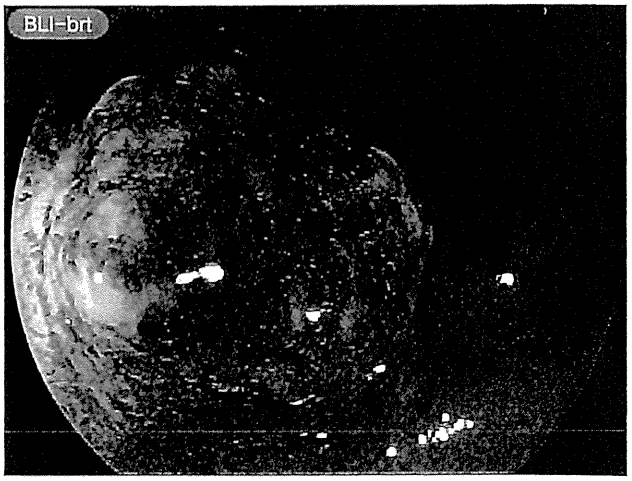
NBI/BLI normal observations : The lesion is imaged as a brownish area.



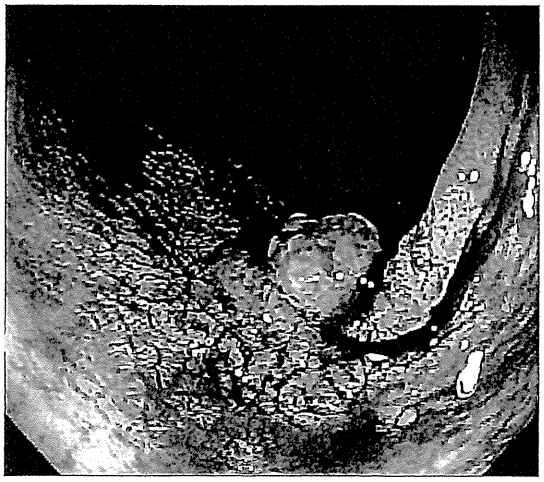
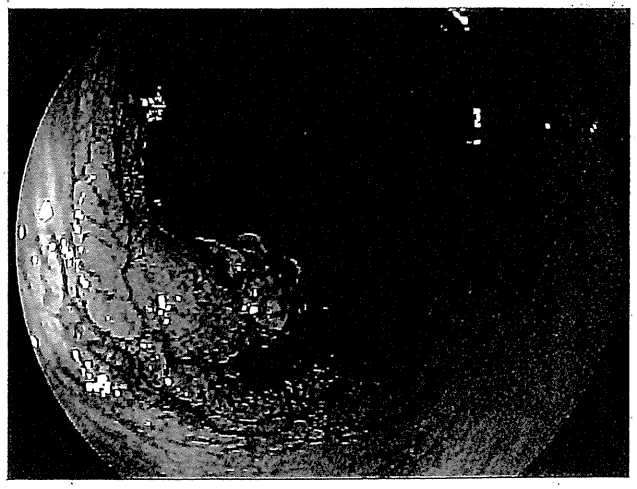
NBI/BLI magnifying observation : In the flat elevated region on the margin, the mesh-like microvascular architecture is maintained but some microvessels are disrupted or branched. As the erythematous elevation is approached, the size irregularity, tortuosity and disruption of vessels become more noticeable.

Endoscopic image (left)
Endoscope : CF-FH260AZI (Olympus) Light source : EVIS LUCERA SPECTRUM (Olympus)
NBI setup : Structure enhancement A8, color mode 3
Endoscopic image (right)
Endoscope : EC-L590ZW (Fujifilm) Light source : LASEREO (Fujifilm)
BLI setup : BLI—Structure enhancement A3, color enhancement C2 ; BLI-bright—Structure enhancement A4, color enhancement C2

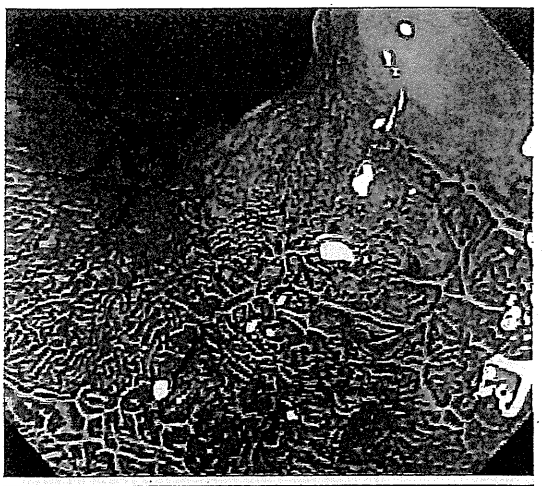


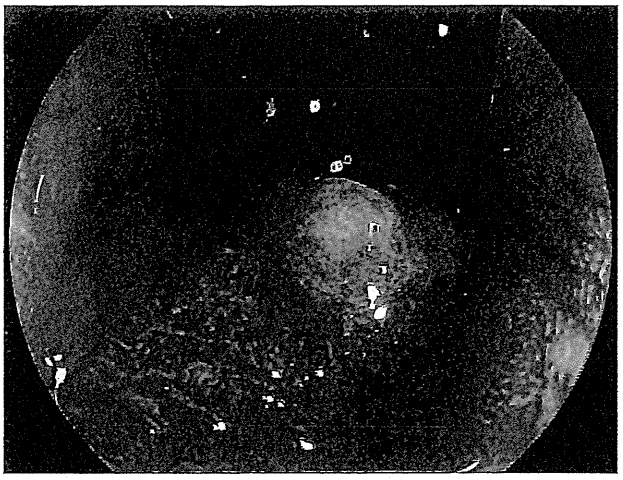


Magnifying observation of erythematous nodule : An area can be seen in which the mesh-like microvascular architecture has been destroyed and the vascular density is low.

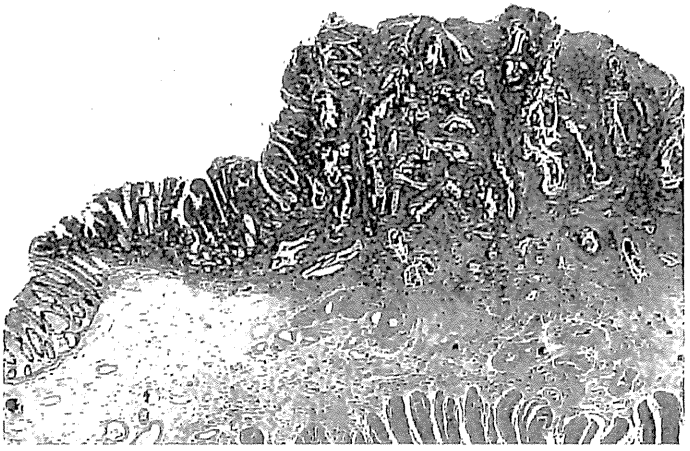



Indigo carmine chromoendoscopy : The lesion borders can be seen clearly and pseudopodial findings are observed on them. A gently elevated region is observed around the erythematous nodule.





Crystal violet magnifying chromoendoscopy : The pit pattern in the flat elevated region in the margin is diagnosed as a mild irregular type V_I and that in the gentle elevation around the erythematous nodule as sever irregular type V_I. As the erythematous nodule itself is diagnosed to have a V_N pit pattern, the lesion is eventually diagnosed to have a V_N pattern (invasive pattern)



A well-differentiated adenocarcinoma with low-grade atypia is recognized in the marginal elevated region where the mild irregular type V_I pin pattern is present. SM invasion of a moderately differentiated adenocarcinoma is observed in the erythematous nodule where the V_N pit pattern is present.

In the slightly elevated region around the nodule where the severe irregular type V_I pit pattern is present, a well-differentiated adenocarcinoma with low-grade atypia has been pushed up by the moderately differentiated adenocarcinoma below it.

Comment

In this case, the authors were able to observe the same lesion using both the NBI and BLI systems on the same day. Although we know that simple comparison of the two systems is difficult because changes in shooting conditions can result in significant variations in how the images look, we decided to show the images of the two systems side by side in this article.
As an erythematous elevated region that appeared the firm consistency was recognized under macroscopic observation, the lesion was suspected to present deep SM invasion from the initial stage. Subsequently, in both NBI and BLI magnifying observation, magnified views of the erythematous nodule showed an area in which the mesh-like microvascular architecture has been destroyed and the vascular density is low. Similarly, a V_N pattern (invasive pattern) was recognized on the erythematous nodule. Based on the findings of both macroscopic and magnifying observation, the lesion was comprehensively diagnosed to have deep SM invasion and subjected to sigmoidectomy. The histopathological diagnosis concluded that the lesion was a moderately to well-differentiated adenocarcinoma with an SM invasion (depth 3, 000 μm), with no vascular invasion or lymph node metastasis.

▶Observation tips It is important to start with macroscopic observation to identify regions of interest such as areas with erythema or depressions and then apply the NBI/BLI and crystal violet magnifying chromoendoscopy. The NBI settings used at our hospital are as reported above, but BLI permits more precise settings of structure enhancement and color enhancement. As our impression is that microvessels observed with BLI sometimes look clear and sometimes blurred depending on the settings, it is important to determine the settings that best facilitate observation according to the needs of each endoscopist in advance.

(Haruyama, S., Saito, Y., Kushima, R.)