

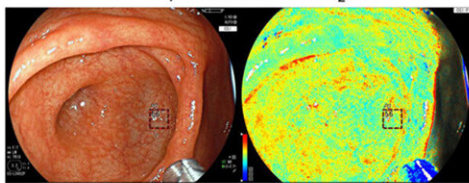
Hypoxia visualized by endoscopy as an indicator for assessing bowel urgency and ulcerative colitis disease activity

January 23 2024

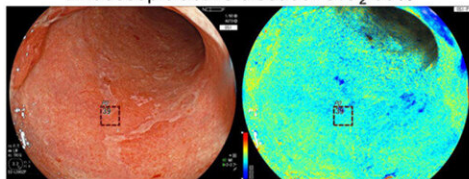
Hypoxia Imaging Colonoscopy for the Objective Measurement of UC Disease Activity

Patients with UC (N = 100, 490 images)

Endoscopic remission: StO₂ 56%



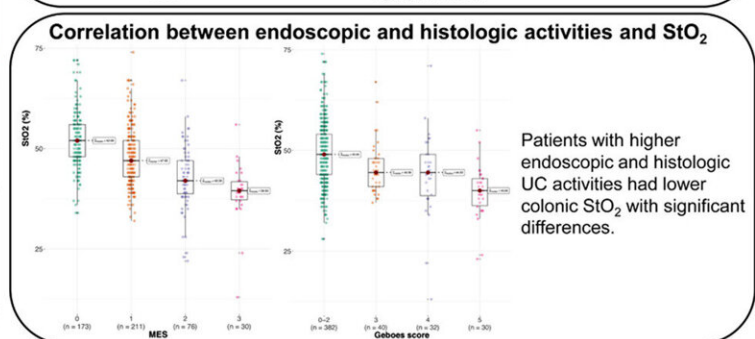
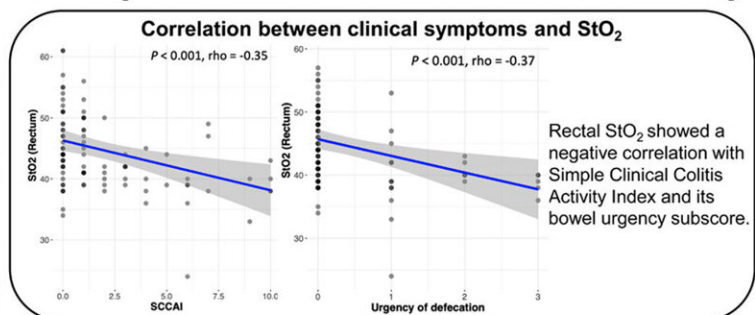
Endoscopic active disease: StO₂ 39%



StO₂ = tissue oxygen saturation

Conclusion

StO₂ obtained by hypoxia imaging colonoscopy is useful for assessing clinical, endoscopic, and histologic activities of UC, suggesting StO₂ may be a novel and objective endoscopic measurement.



Graphical abstract. Credit: *Gastrointestinal Endoscopy* (2024). DOI: 10.1016/j.gie.2023.12.035

Ulcerative colitis (UC) is a chronic colitis of indeterminate origin, characterized by continuous inflammation spreading from the rectum. Common symptoms include diarrhea, bloody stool, and bowel urgency.

The initial treatment goal is to alleviate these clinical symptoms; however, the ultimate aim is to achieve a thorough resolution of the endoscopic inflammation of the colonic mucosa.

Despite the high prevalence of bowel urgency in UC patients and its substantial impact on their quality of life, there are limited tools for its objective evaluation. Currently, a [scoring system](#) is employed during colonoscopy to evaluate the severity of colitis, but this method is subject to variability in interpretation among physicians, complicating the objective assessment of disease activity.

In a study [published](#) in *Gastrointestinal Endoscopy*, researchers at University of Tsukuba have investigated hypoxia in the inflamed colonic mucosa of UC patients.

Inflammation leads to [oxygen depletion](#) in the mucosa as [inflammatory cells](#) consume substantial oxygen, and mucosal blood flow decreases due to microvascular dysfunction.

By performing hypoxia imaging colonoscopy on UC patients and measuring the oxygen saturation in their colonic mucosa, they discovered a correlation between the severity of clinical symptoms, particularly bowel urgency and reduced oxygen saturation in the rectal mucosa.

Further analysis showed that the lower oxygen saturation in the colonic mucosa was associated with greater severity of colitis, as assessed by endoscopy or microscopy.

These findings suggest that the [oxygen saturation](#) values obtained from hypoxia imaging colonoscopy can be utilized to evaluate both bowel urgency and the severity of [ulcerative colitis](#). This method promises to offer a highly objective measure of UC disease activity.

More information: Shintaro Akiyama et al, Clinical Usefulness of Hypoxia Imaging Colonoscopy for the Objective Measurement of Ulcerative Colitis Disease Activity, *Gastrointestinal Endoscopy* (2024). DOI: [10.1016/j.gie.2023.12.035](https://doi.org/10.1016/j.gie.2023.12.035)

Provided by University of Tsukuba

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