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Interactive Case Presentation: IUS in UC – What is your diagnosis?

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IBUS Advanced Ultrasound Workshop – Module 3
DDW, Chicago, IL, May 4th, 2026

Workshop organised in collaboration with

IUSCAN Intestinal Ultrasound Group of the United States and Canada

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Disclosure

Speaker, consultant or advisory board member:

AbbVie, Bristol Myers Squibb, EA Pharma, Eisai, Eli Lilly, Ferring Pharmaceuticals, Gilead Sciences, Janssen, JIMRO, Kissei, Kyorin Pharmaceutical, Mitsubishi Tanabe Pharma, Mochida Pharmaceutical, Nippon Kayaku, Pfizer, Takeda, and Zeria Pharmaceutical

Research funding:

AbbVie, Alfresa Pharma, EA Pharma, Kyorin Pharmaceutical, Mochida Pharmaceutical, Nippon Kayaku, Otsuka Holdings, Sekisui Medical, Takeda, Thermo Fisher Scientific and Zeria Pharmaceutical.

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Intended Learning Outcomes (ILOs):

By the end of this session, the learner will be able to:

- Analyse real patient cases to identify IUS findings in UC.
- Interpret case histories and cine-loops/images of IUS findings.
- Apply knowledge through multiple-choice questions to reinforce key learning points.
- Explain the rationale behind correct answers and highlight essential IUS teaching points.

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Agenda

Case-based UC discussion

1. **Score**
   Using clinical, endoscopic, biomarker, and IUS scores to assess disease severity
2. **Induction of remission**
   Assessing treatment response and confirming mucosal improvement
3. **Monitoring during remission**
   Using IUS to support maintenance follow-up and risk stratification
4. **Differential diagnosis in UC**
   Recognizing conditions that should be considered during apparent UC flare

Goal: integrate endoscopy, biomarkers, severity scores, and intestinal ultrasound for practical UC decision-making.

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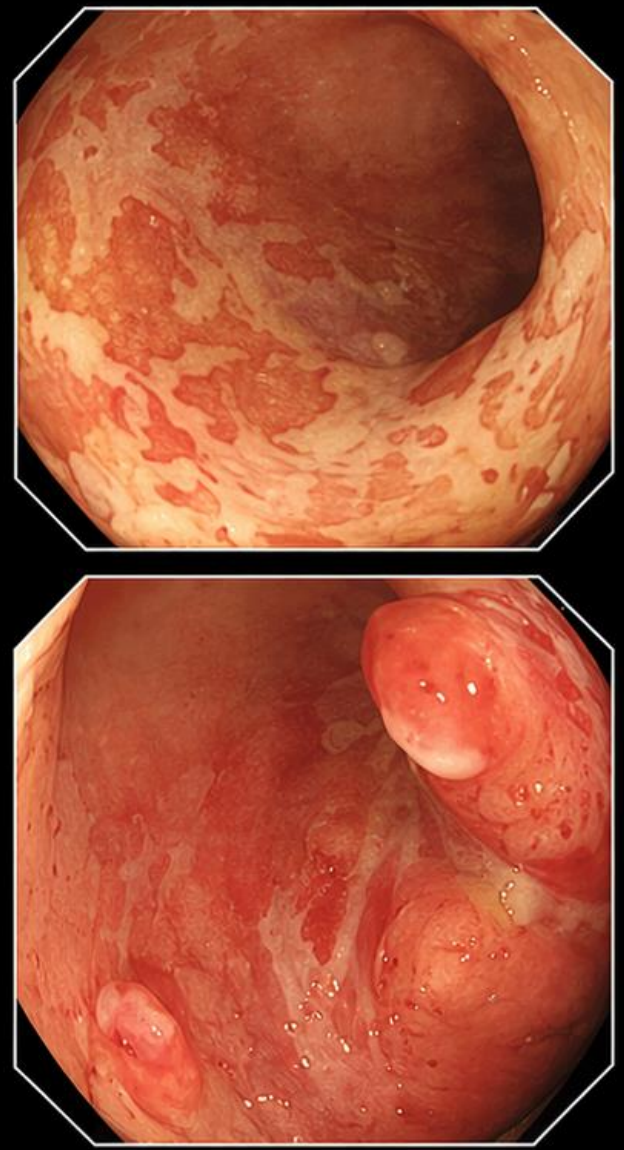
Refractory UC case

Clinical history

- Refractory ulcerative colitis with multiple treatment failures
- 2019: steroid-resistant disease
- 2021: primary non-response to golimumab and tofacitinib
- 2022: failed etrasimod (clinical trial) and ustekinumab
- Treated with vedolizumab + 6-MP, then infliximab + 6-MP
- 2023: switched to upadacitinib, then tacrolimus + 6-MP
- Baseline severity: RB >50%, BF 8/day (Lichtiger index 11), FC 13,400, CRP 4.8, LRG 23.3

Baseline colonoscopy



Baseline (Transverse)

Male, 43-year-old, Mirikizumab

(6MHz Convex, CANON Aplio500)

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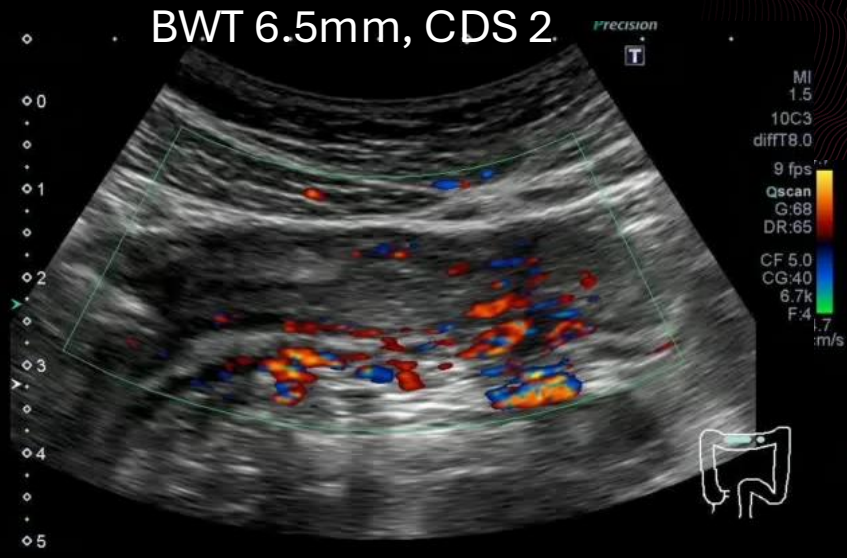
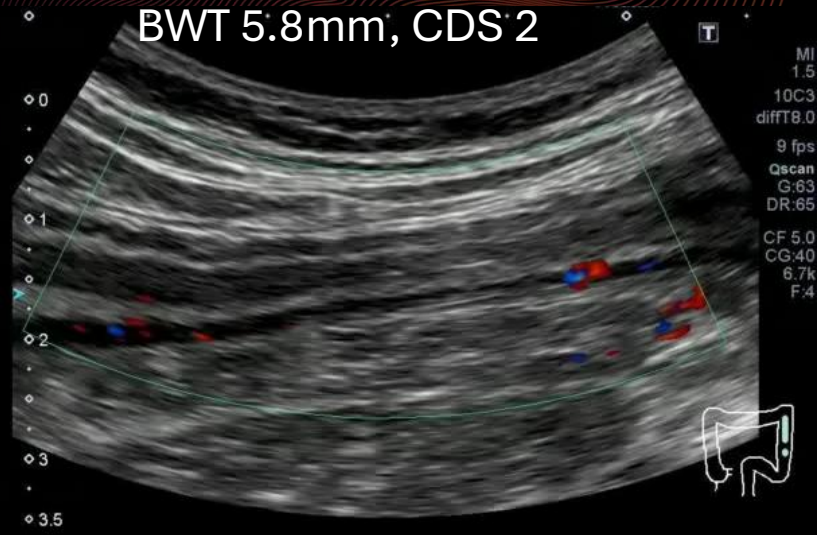
Baseline

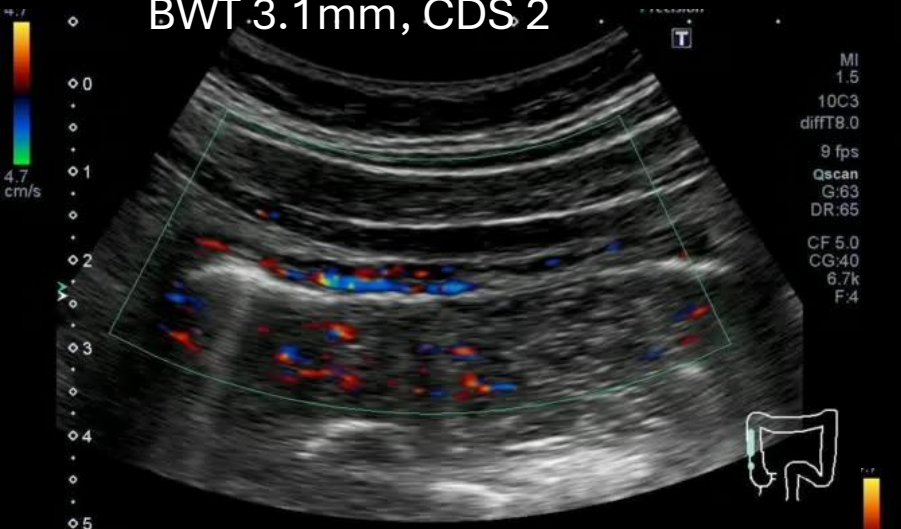
BWT 6.5mm, CDS 2



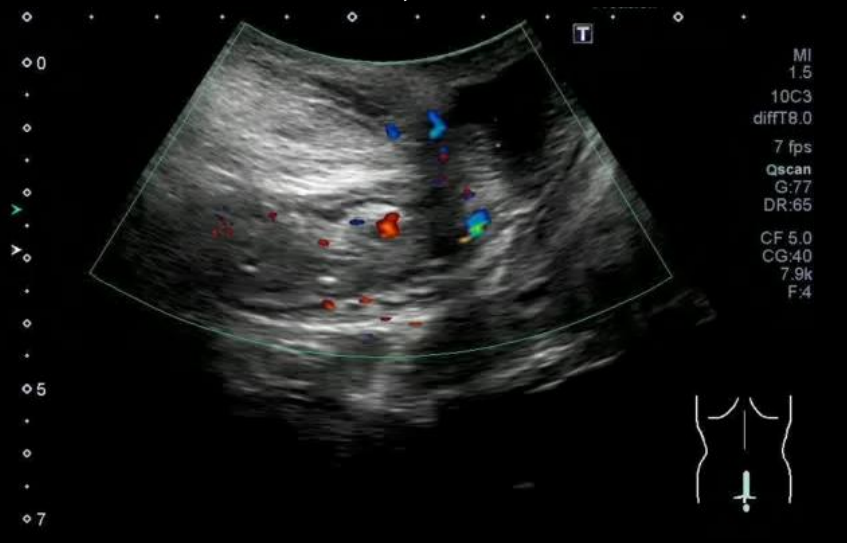
BWT 5.8mm, CDS 2



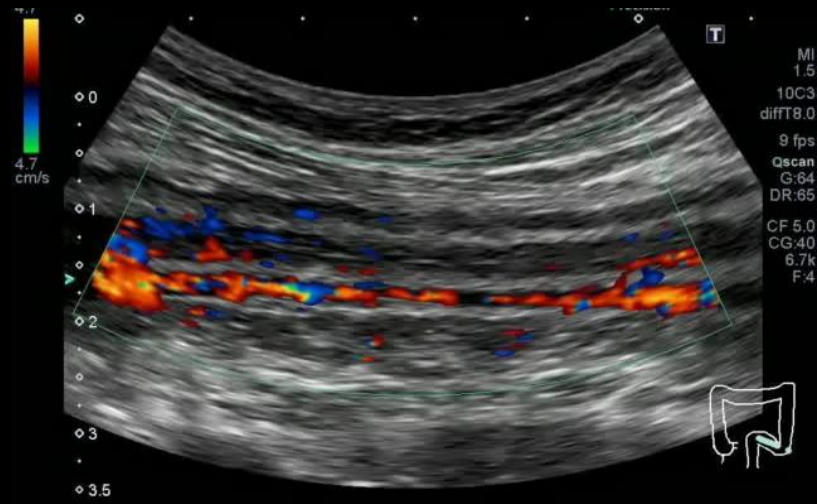
BWT 3.1mm, CDS 2



BWT 6.1mm, CDS 1



BWT 4.6mm, CDS 2



(6MHz Convex, CANON Aplio500)

Practice Question (UC)

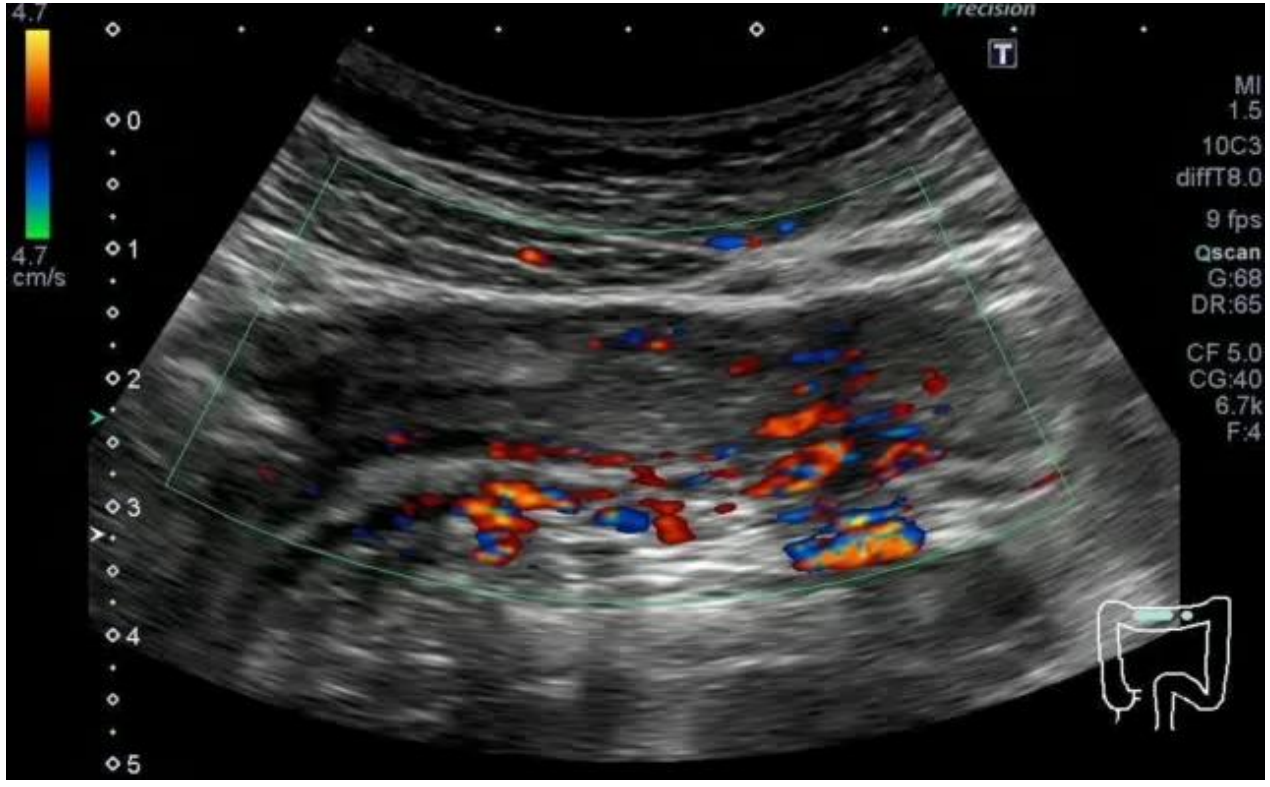
MILAN ULTRASOUND CRITERIA (MUC)

The Standardized Equation for UC Activity

MUC = (1.4 × Bowel Wall Thickness) + (2.0 × Bowel Wall Flow)

6.5

2



POINT-BASED INDICES: UC-IUS & CIVITELLI

UC-IUS INDEX (ADULTS)

Comprehensive 4-parameter scoring for segment-specific inflammation

UC-IUS PARAMETERS (0-8 Points)

- ☐ **BWT:** >2mm (1pt) / >3mm (2pts) / >4mm (3pts)
- ☐ **CDS (Color Doppler):** Spots (1pt) / Stretches (2pts)
- ☐ **Abnormal Haustrations** (1pt)
- ☐ **Fat Wrapping** (1pt)

BWT 6.5mm, CDS subscore 2,
MUC 11.1, UC-IUS index 6

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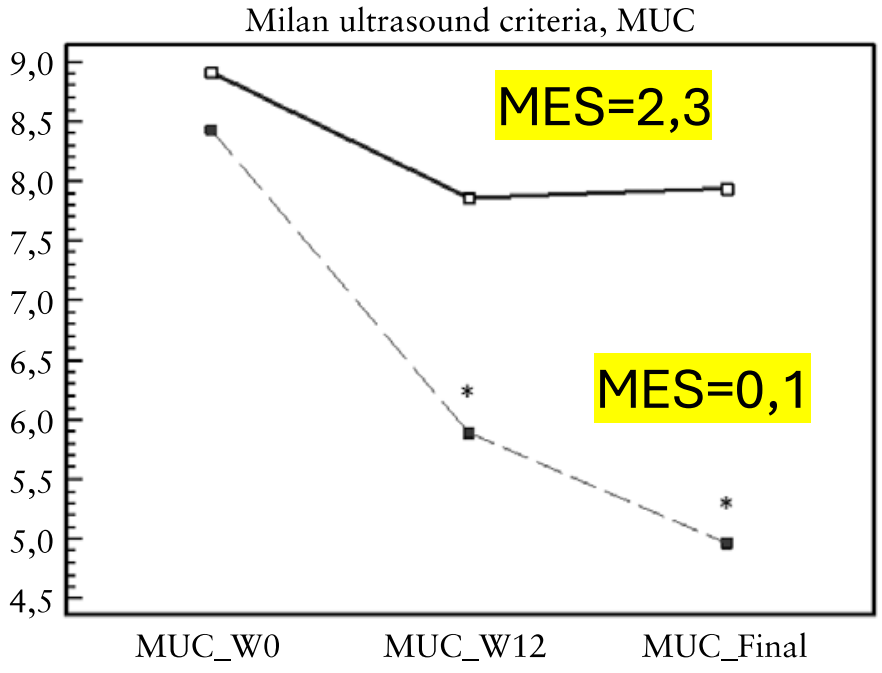
MUC Predicts Endoscopic Improvement to Biologics in UC



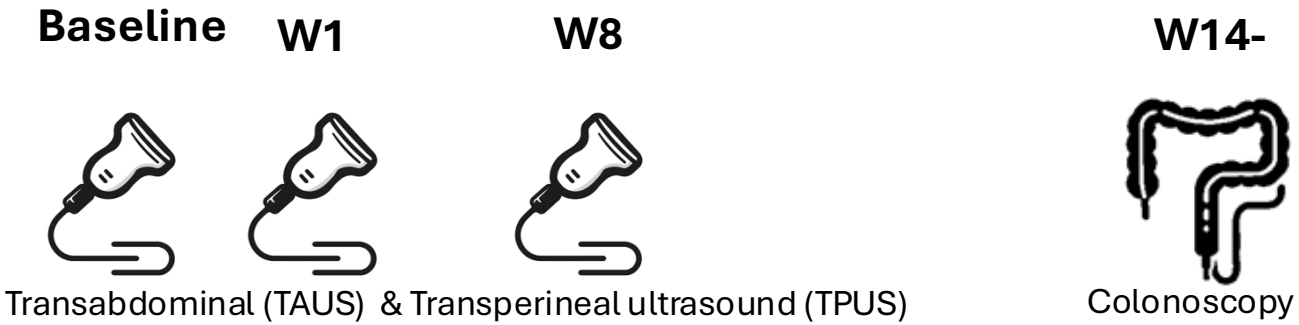
average follow-up time of 9.40 months [SD=3.59]

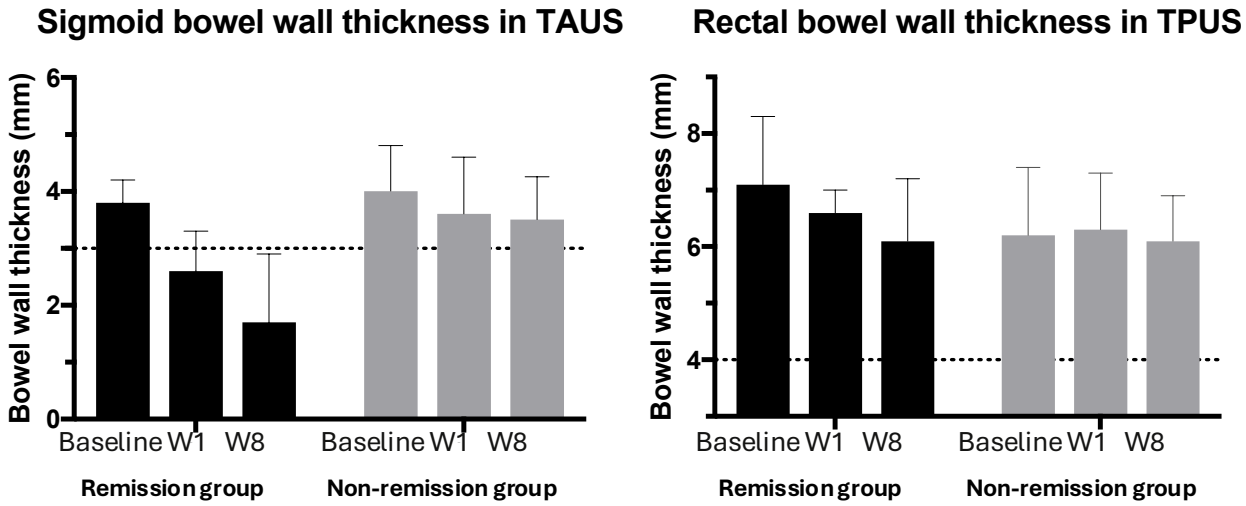
	Univariable analysis		Multivariable analysis	
Parameter	**OR [95% CI]**	***p***	**OR [95% CI]**	***p***
MUC ≤ 6.2	7.0 [1.84–26.61]	***0.0043***	5.80 [1.49–22.47]	***0.010***
FC, µg/g <50	6.0 [1.52–23.67]	***0.010***	—	—
50–250	0.44 [0.07–2.51]	0.35		
>250	0.30 [0.08–1.12]	0.074		
CRP<5 mg/L	2.03 [0.51–8.00]	0.31	—	—
PMS ≤ 2	3.54 [0.97–12.90]	0.054	—	—

Influence of non-invasive tools at week 12 on the risk of endoscopic improvement [MES ≤ 1] at reassessment
Abbreviations: MES, Mayo endoscopic score; MUC, Milan ultrasound criteria; FC, faecal calprotectin; CRP, C-reactive protein; PMS, partial Mayo score.
Significant *p*-values are highlighted in bold and italics.

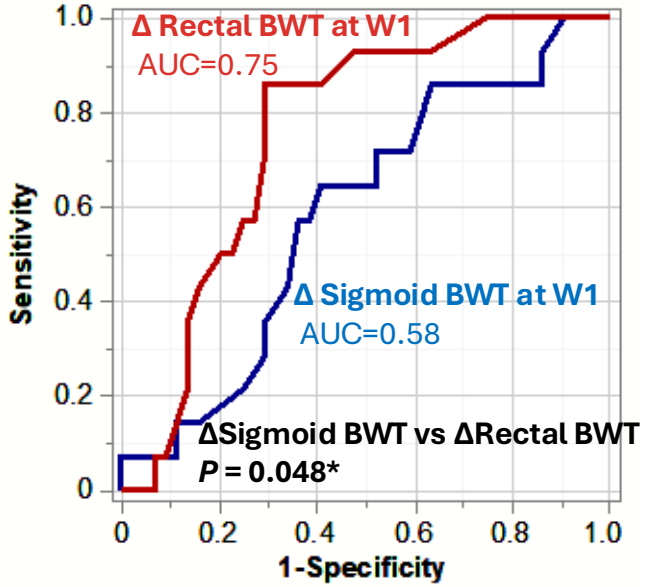
Allocca, M et al. JCC 2023

Early Reduction in Rectal Wall Thickness on Transperineal Ultrasound Predicts Mucosal Healing in Ulcerative Colitis





Clinical-endoscopic remission



Reduction in rectal bowel wall thickness (BWT) by week 1 in response to advanced therapy predicts clinical-endoscopic remission and histo-endoscopic mucosal improvement.

Sagami S et al. J Crohns Colitis.2025 19:1876-4479. PMID:40794598.

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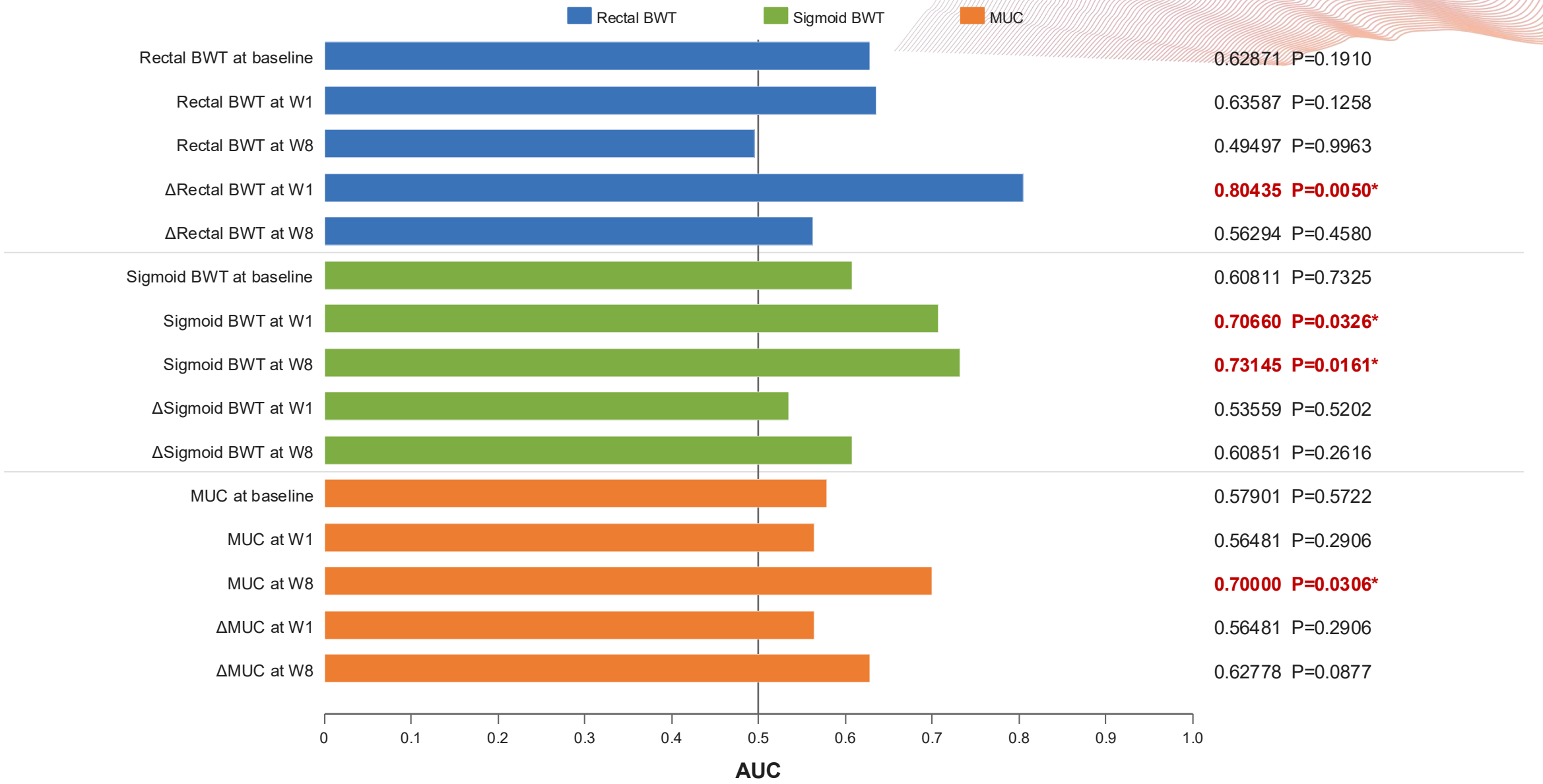
Nancy histological index ≤ 1 histological remission

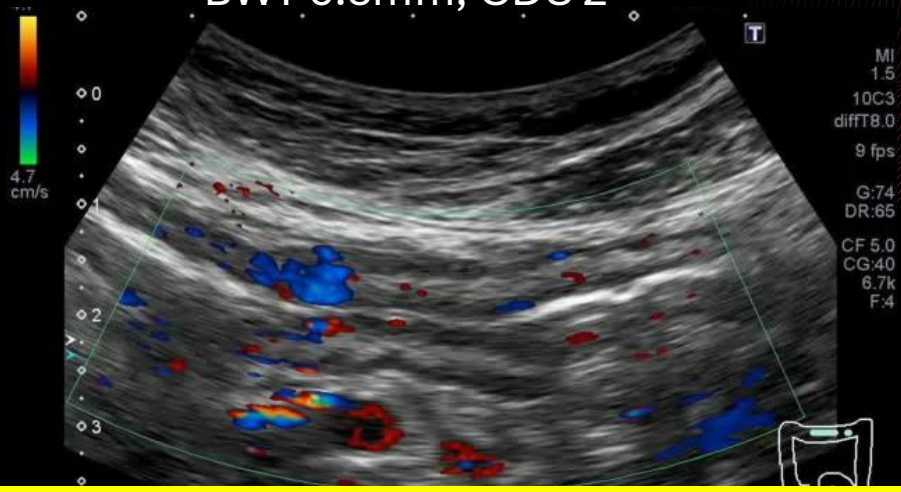


Sagami S et al. J Crohns Colitis.2025 19:1876-4479. PMID:40794598.

AUC, area under the curve; BWT, bowel wall thickness; W1, 1 week after induction therapy; W8, 8 weeks after induction therapy; MUC, Milan Ultrasound Criteria. * p<0.05.

3W after

BWT 6.5mm, CDS 2



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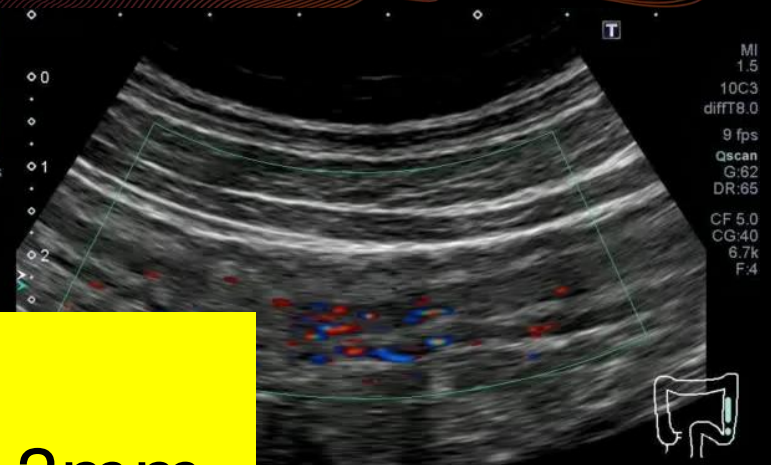
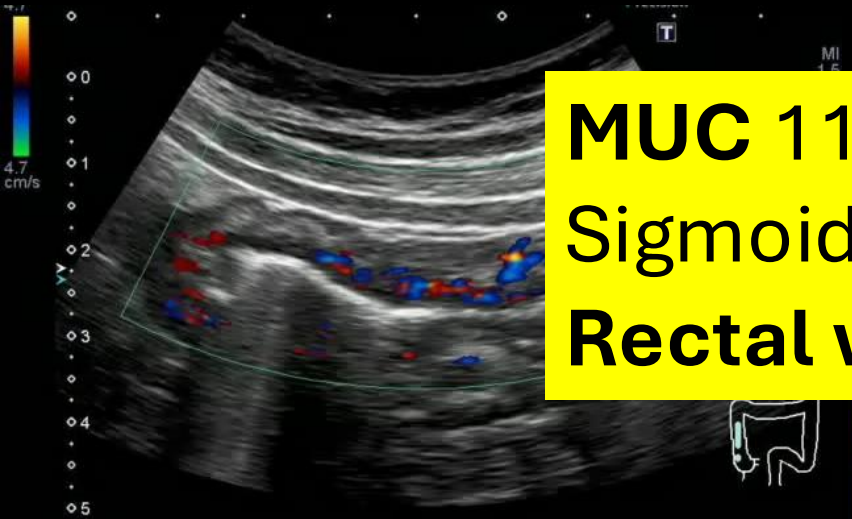
BWT 3.7mm, CDS 2



BWT 7.6mm, CDS 2

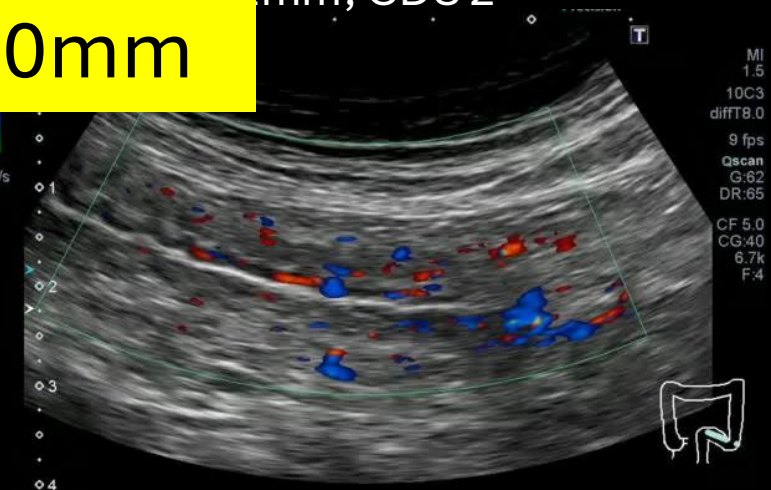


MUC 11.1→12.6

Sigmoid wall thickness 4.6mm→4.2mm

Rectal wall thickness 6.1mm→6.0mm

mm, CDS 2



(6MHz Convex, CANON Aplio500)

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Goal: integrate endoscopy, biomarkers, severity scores, and intestinal ultrasound for practical UC decision-making.

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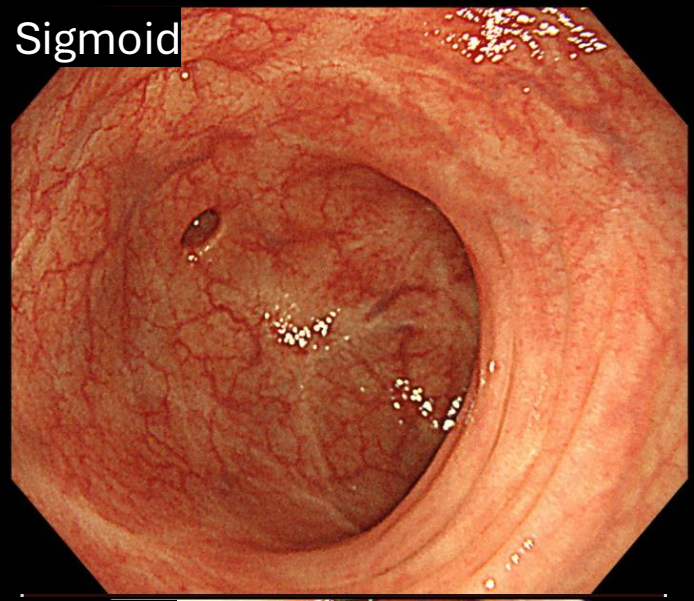
52-year-old male
Pancolitis / clinical remission

Clinical history

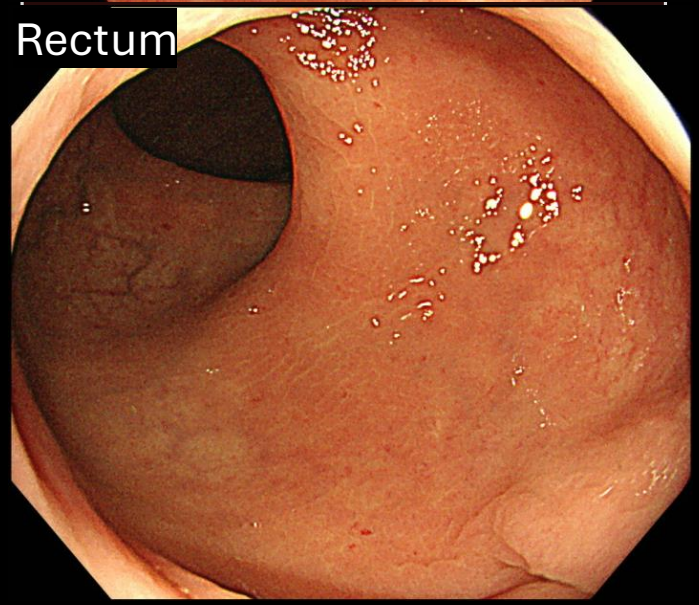
- Clinical remission at baseline
- Extensive ulcerative colitis: pancolitis
- Disease duration: 43 months; BMI 29
- Current therapy: Lialda 4,800 mg + GLM 100 mg
- Laboratory profile: WBC 5.58, Hb 12.4, ESR 14
- CRP 0.01, Alb 4.1
- MES: rectum 1 and cecum 1; others 0

Baseline colonoscopy

Sigmoid



Rectum



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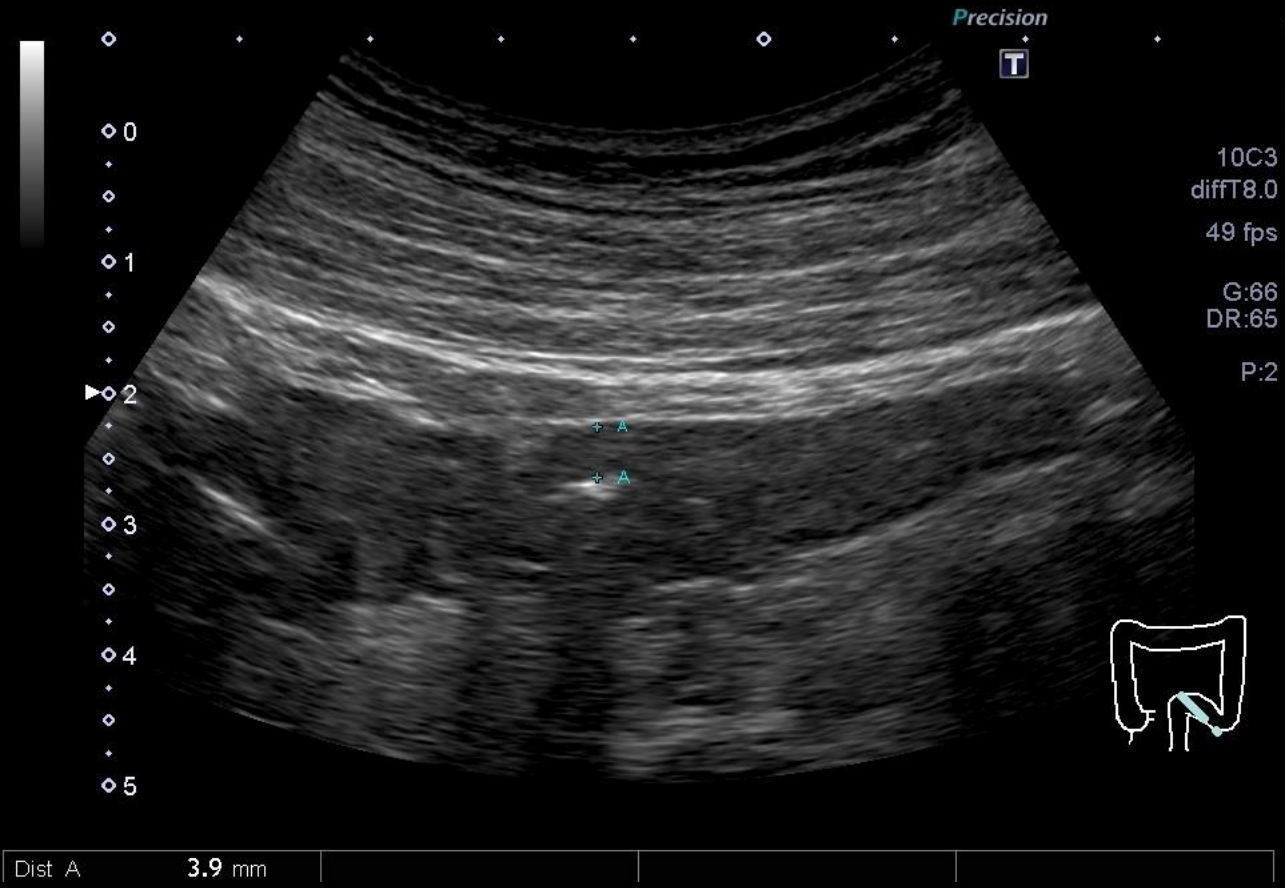
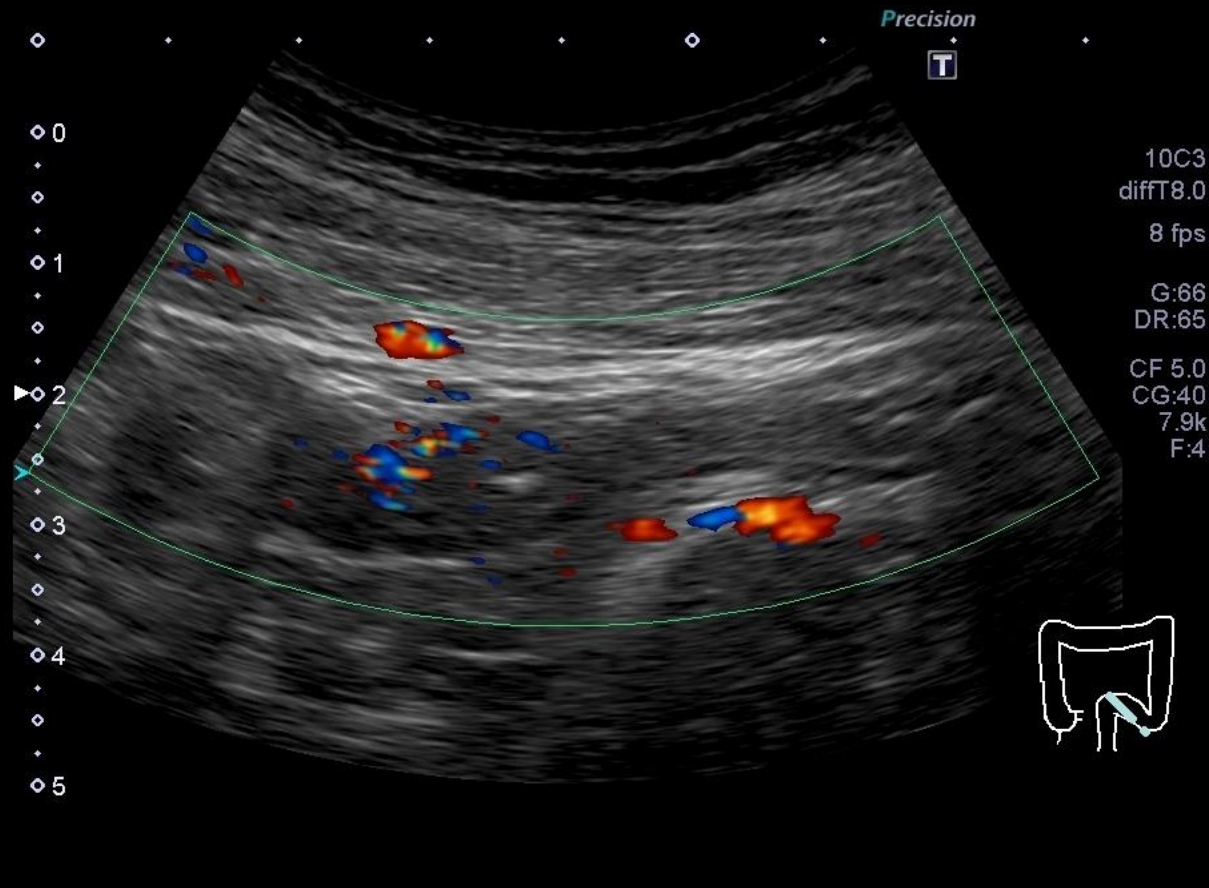
Sigmoid longitudinal



Sigmoid longitudinal CDS



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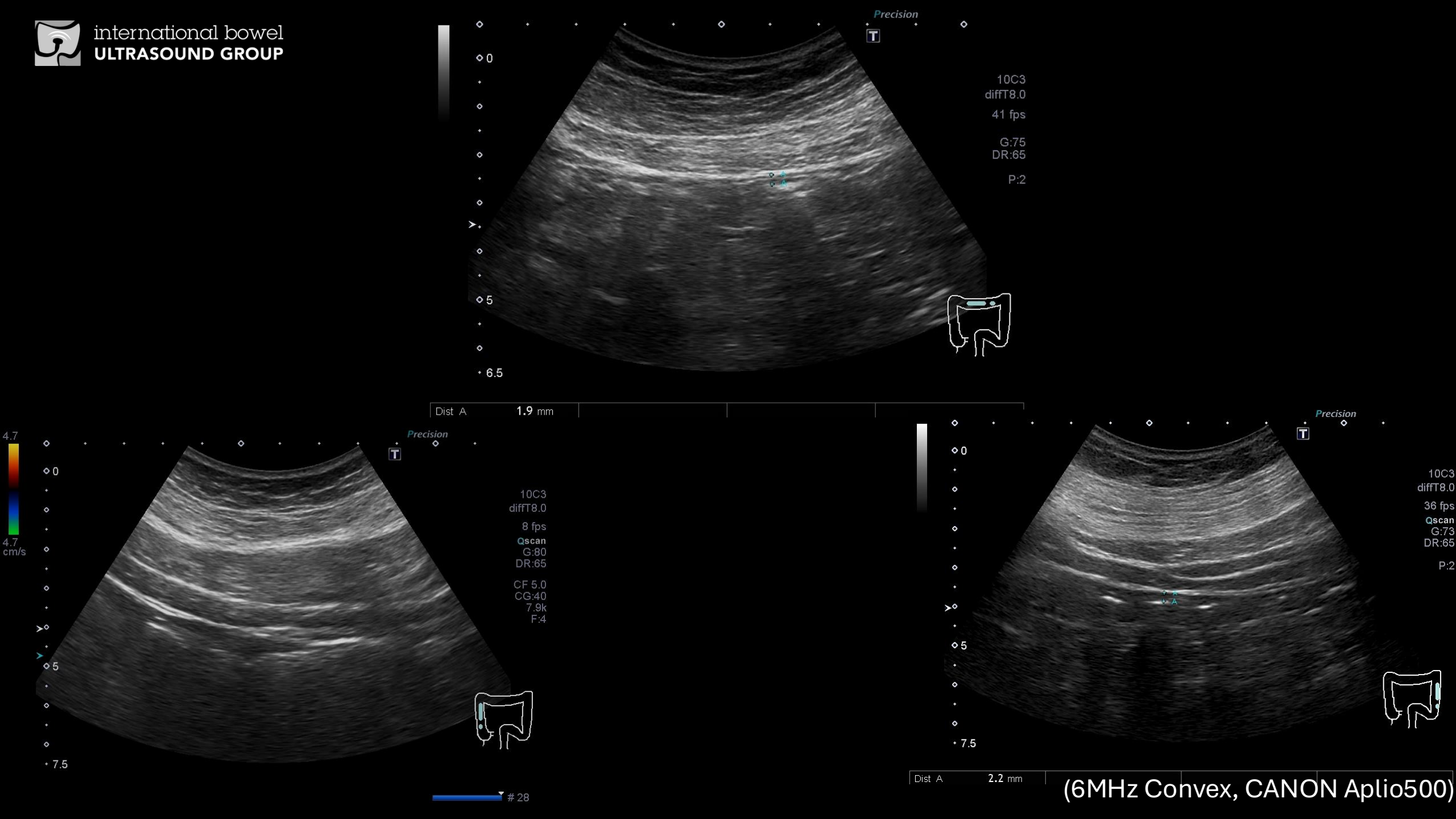
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Precision
10C3
diffT8.0
41 fps
G:75
DR:65
P:2
Dist A 1.9 mm
Precision
10C3
diffT8.0
8 fps
Qscan
G:80
DR:65
CF 5.0
CG:40
7.9k
F:4
4.7
4.7
cm/s
28
Precision
10C3
diffT8.0
36 fps
Qscan
G:73
DR:65
P:2
Dist A 2.2 mm
(6MHz Convex, CANON Aplio500)

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Follow-up course

Clinical relapse after baseline remission

Clinical flare and treatment escalation

A patient in clinical remission developed symptomatic relapse during follow-up, requiring stepwise intensification and later biologic switch.

Baseline

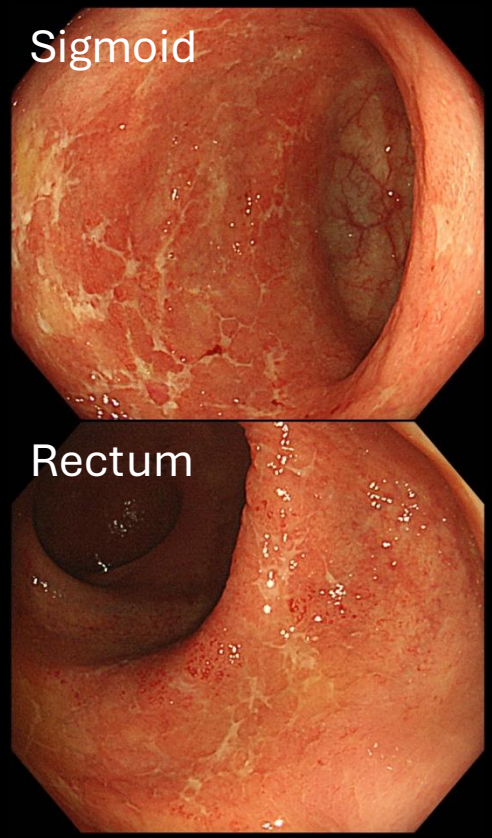
Clinical remission, fecal calprotectin 61
Lialda 4.8 g + GLM 100 mg

Day 131

Clinical flare (5 bowel movements)
Lialda 2.4 → 4.8 g + Pentasa suppository
Budesonide form added

Day 397

Rectal breeding+, 8 bowel movements
Treatment switch
Changed to ustekinumab



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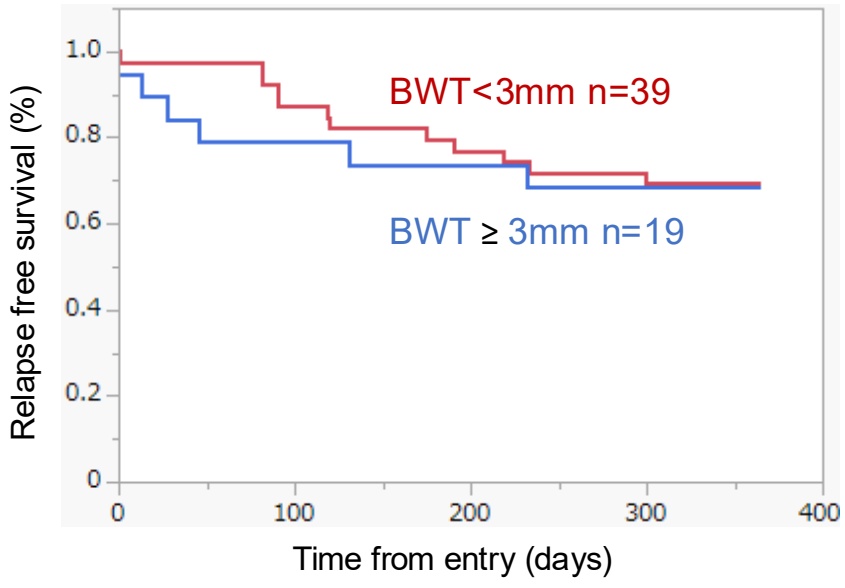
MUC predicts relapse in UC patients in clinical remission

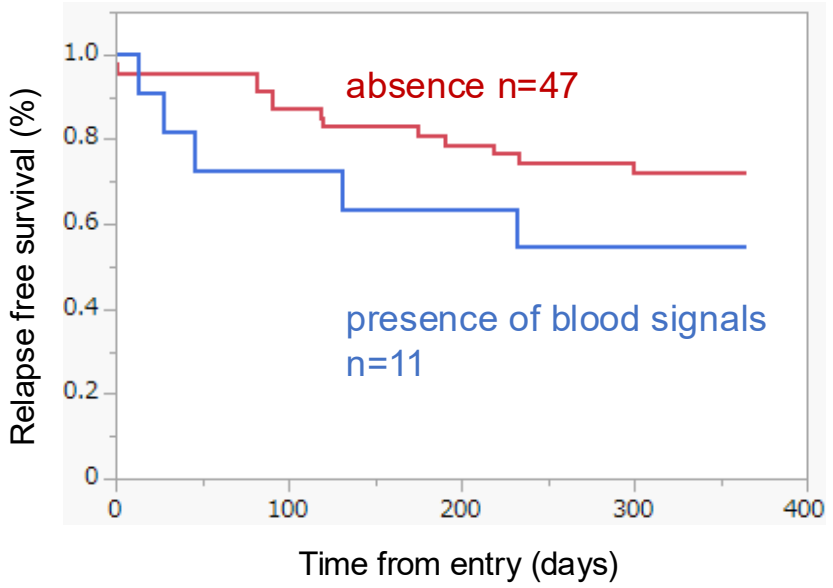
BWT

p=0.8221



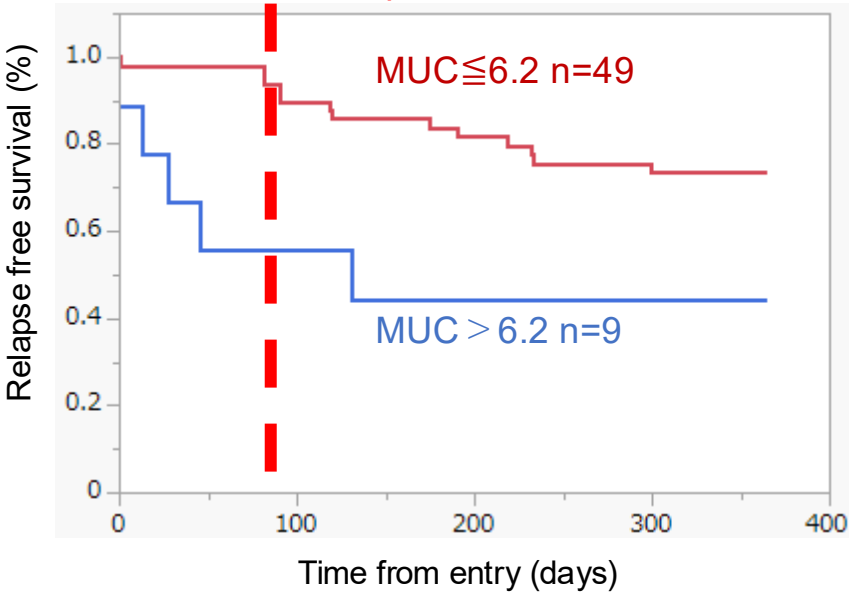
CDS

p=0.1965



MUC

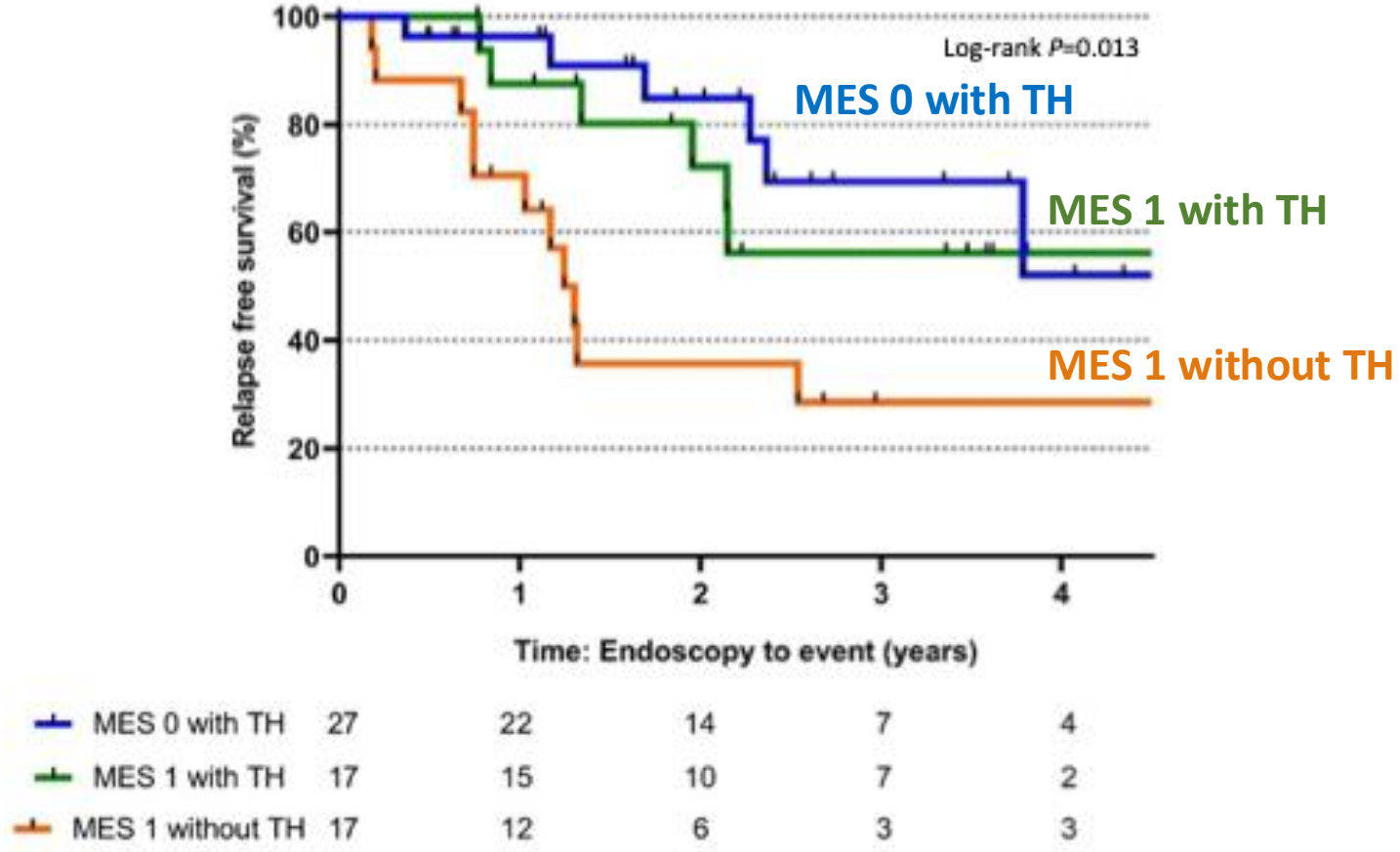
p=0.0191



MUC can be used for long-term monitoring during maintenance

Maeda M, Sagami S, Kobayashi T et al. Inflamm Intest Dis 2023

Transmural healing in UC (MES<2) improves long-term outcomes compared to endoscopic healing alone



- ✓ **Transmural healing (BWT < 3 mm)** by IUS is a **strong, noninvasive marker** of durable remission, outperforming **EH level** for long-term risk stratification.
- ✓ Supports incorporating **IUS-defined TH** into UC monitoring and de-escalation decisions—especially when MES = 1.

Lim CT et al.. J Crohns Colitis. 2025.. PMID: 40845157.

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Clinical history

42-year-old male
Pancolitis / severe

- Clinical moderate at baseline

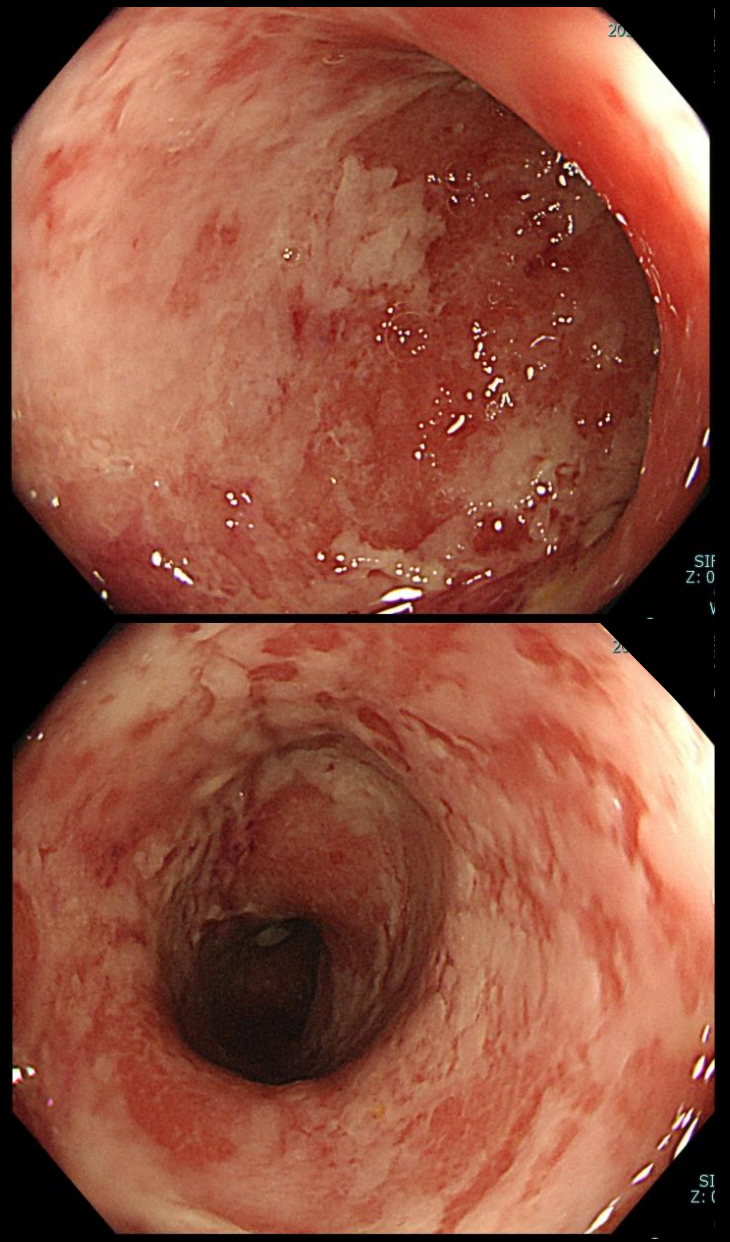
bowel movement 7-9, nocturnal diarrhea+, rectal breeding <50%, urgency+

- Extensive ulcerative colitis: pancolitis
- Disease duration: 8 years; BMI 20, NUDT15 Cys/Cys

ADA partial responder

- Current therapy: IFX 5mg/kg
- Laboratory profile: WBC 5.42, Hb 12.8, ESR 48
- CRP 0.63, Alb 3.7, Procalcitonin 0.03 (<0.05)

- CD toxin B ＋, GDH antigen +



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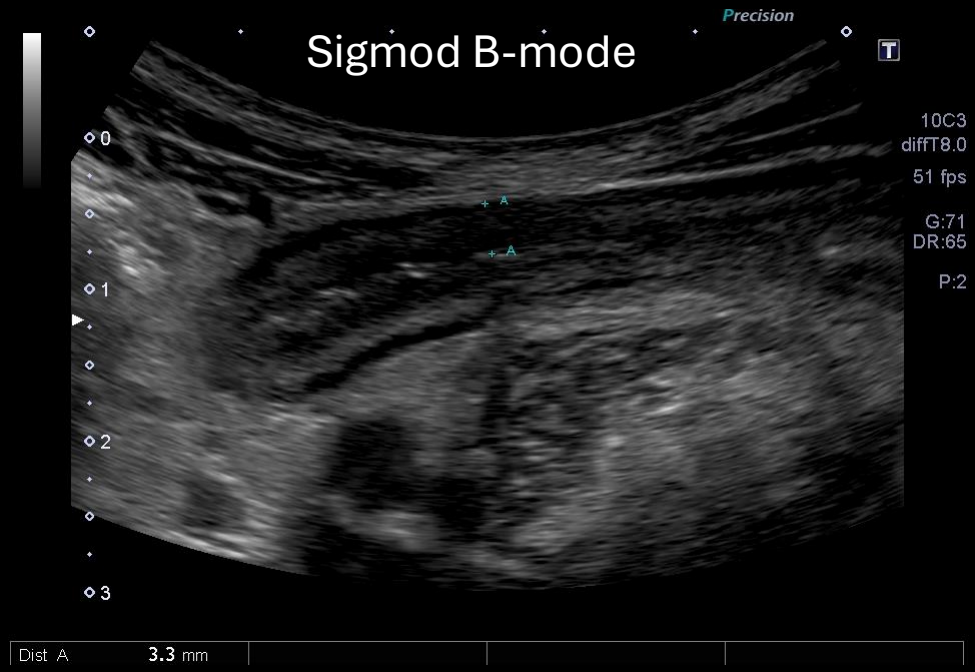
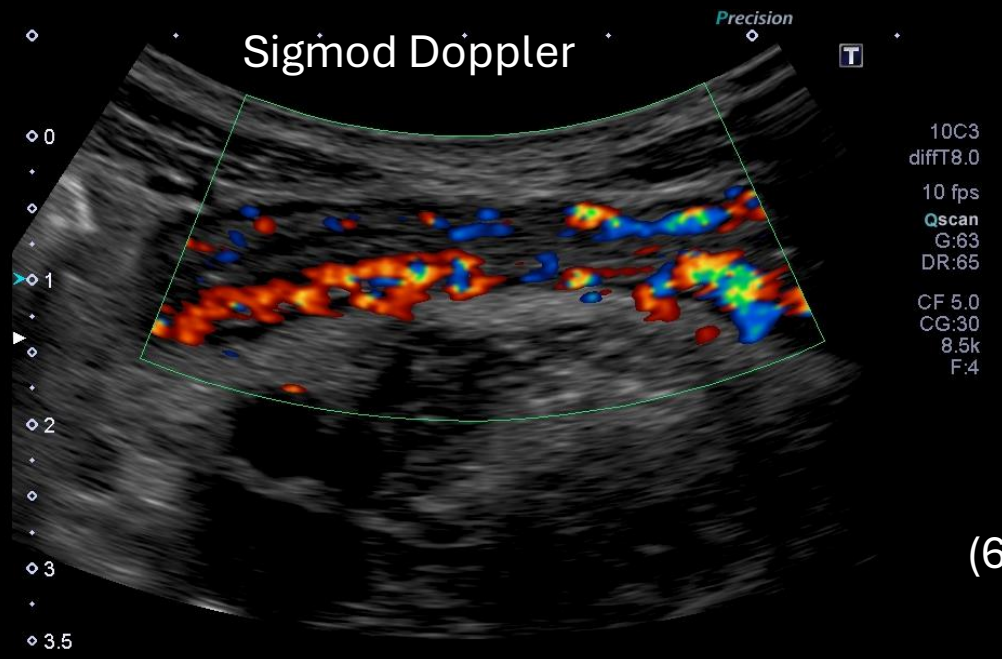
Sigmod B-mode



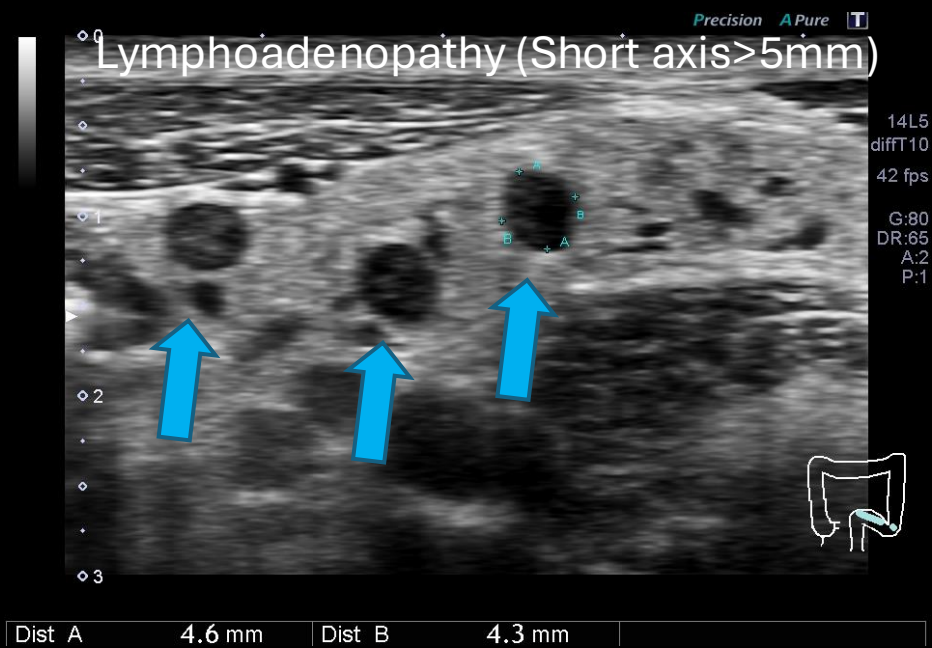
Sigmod Doppler



(6MHz Convex)

Sigmod B-mode

Lymphoadenopathy (Short axis>5mm)



(10MHz Linear)

CANON Aplio500

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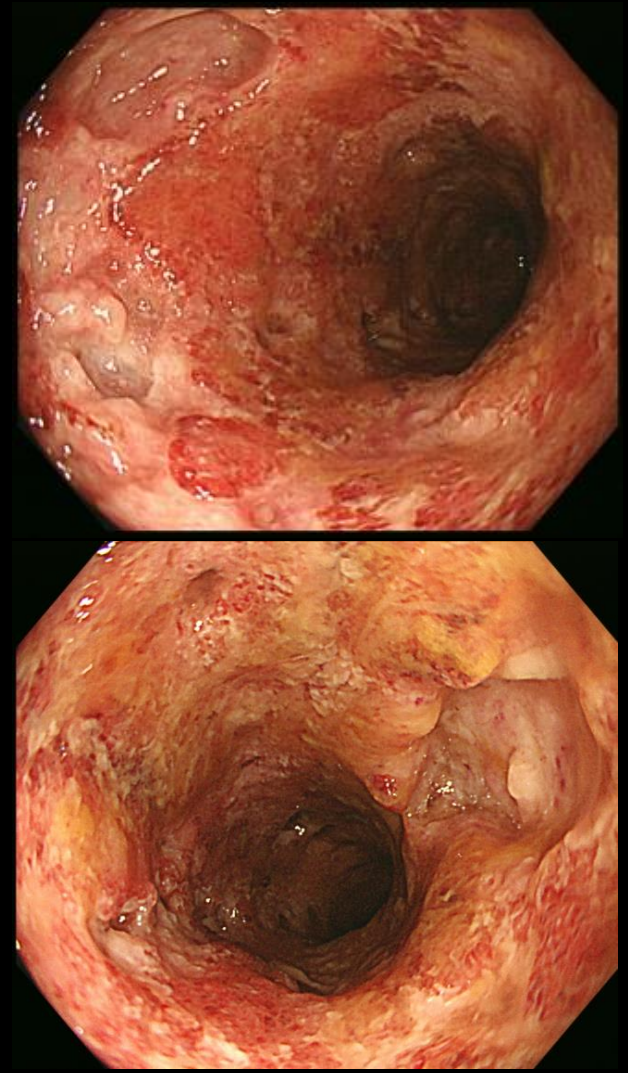
66-year-old female
Pancolitis / acute severe

Clinical history

- Clinical moderate at baseline
bowel movement 7-9, nocturnal diarrhea+, rectal breeding <50%, urgency+
- Extensive ulcerative colitis: pancolitis
- Disease duration: 11 years; BMI 21, NUDT15 Arg/Arg
AZA intolerance (fever)

- VDZ, UST: non-responder partial responder
- Current therapy: prednisolone 50mg → 40mg🔥→IFX
- Laboratory profile: WBC 8.75, Hb 10.1, CRP 11.59 (<0.05), Alb 2.1, Procalcitonin 0.05 (≤0.05), LRG 66.9ugg/mL (<16), ESR 59mm

- CD toxin -, stool culture -
- CMV-IgG CLIA+(≥250), CMV-IgM+ 1.06 (<0.85)
CMVpp65 antigen (C10,11) 18,13/50000
- MES 3



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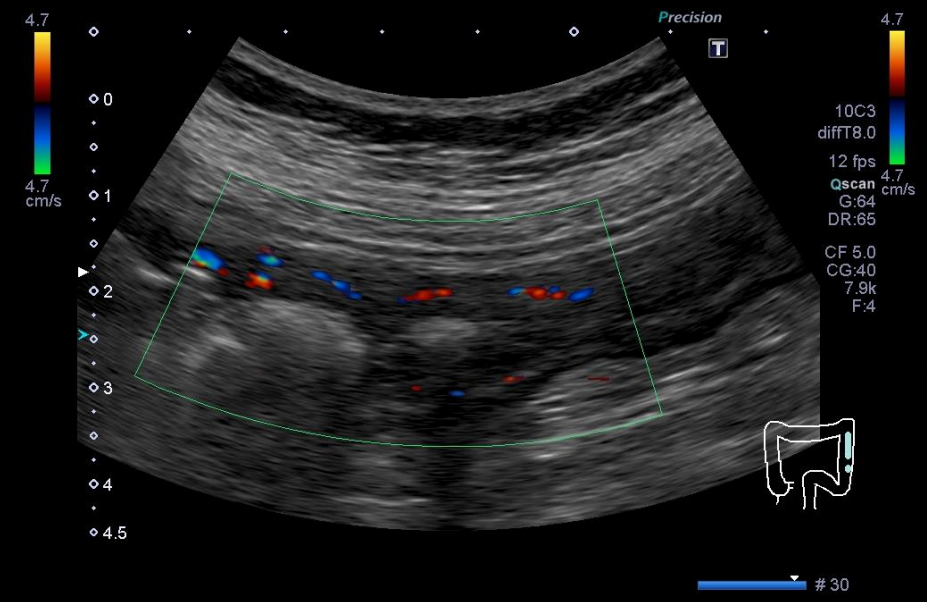
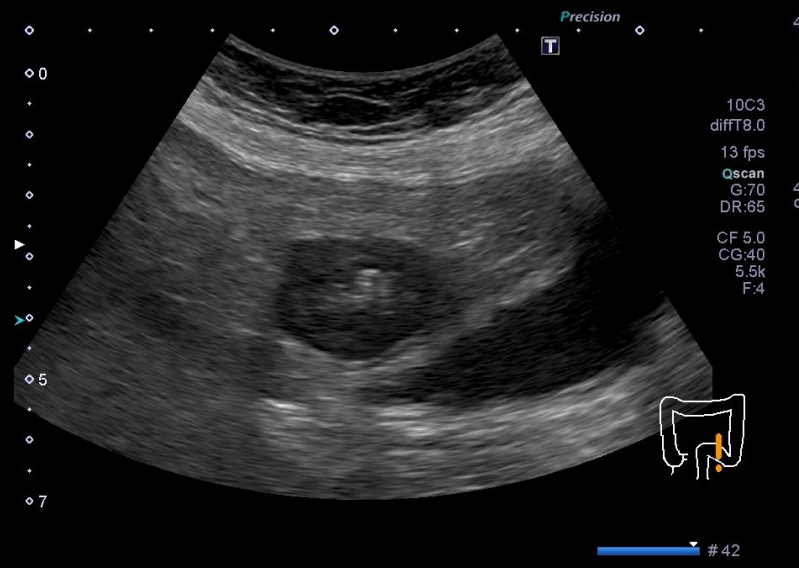
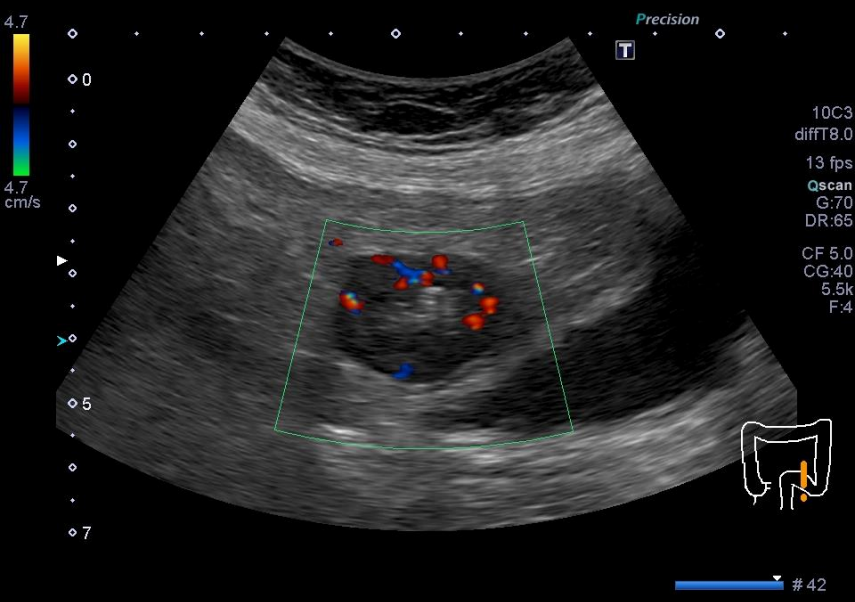
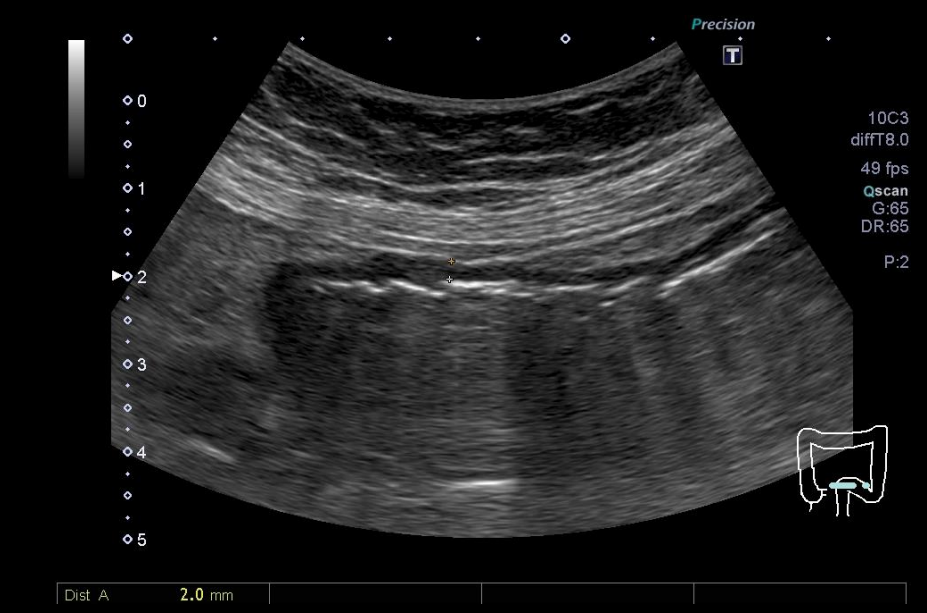
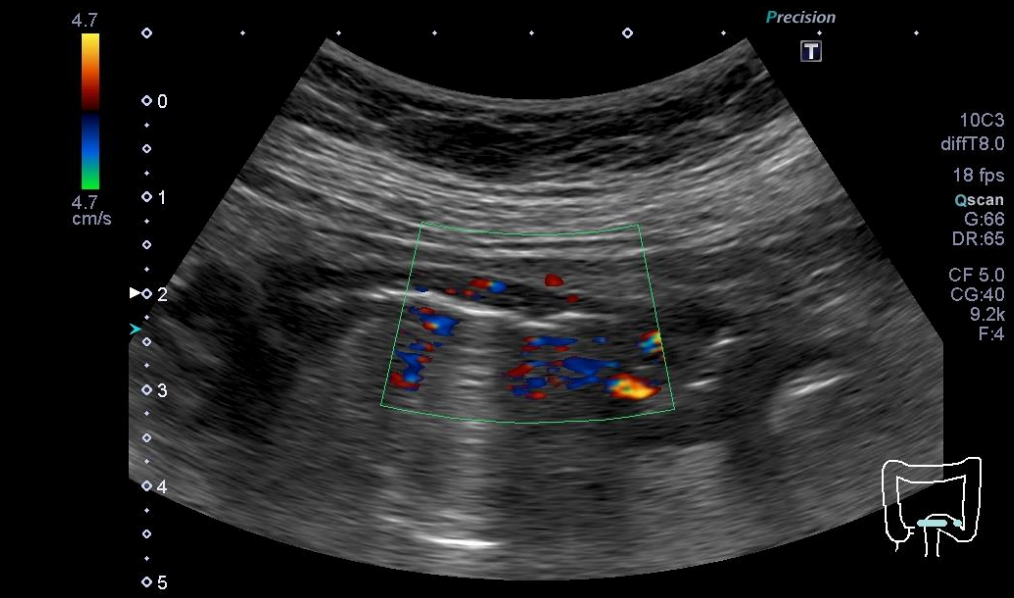




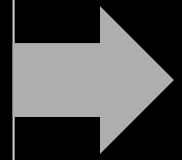






(6MHz Convex, CANON Aplio500)

BWT<2mm
AND
Color Doppler (+)
AND
Loss of stratification
AND
i-fat (+)



Deep ulcer

Critical!!!

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Clinical history

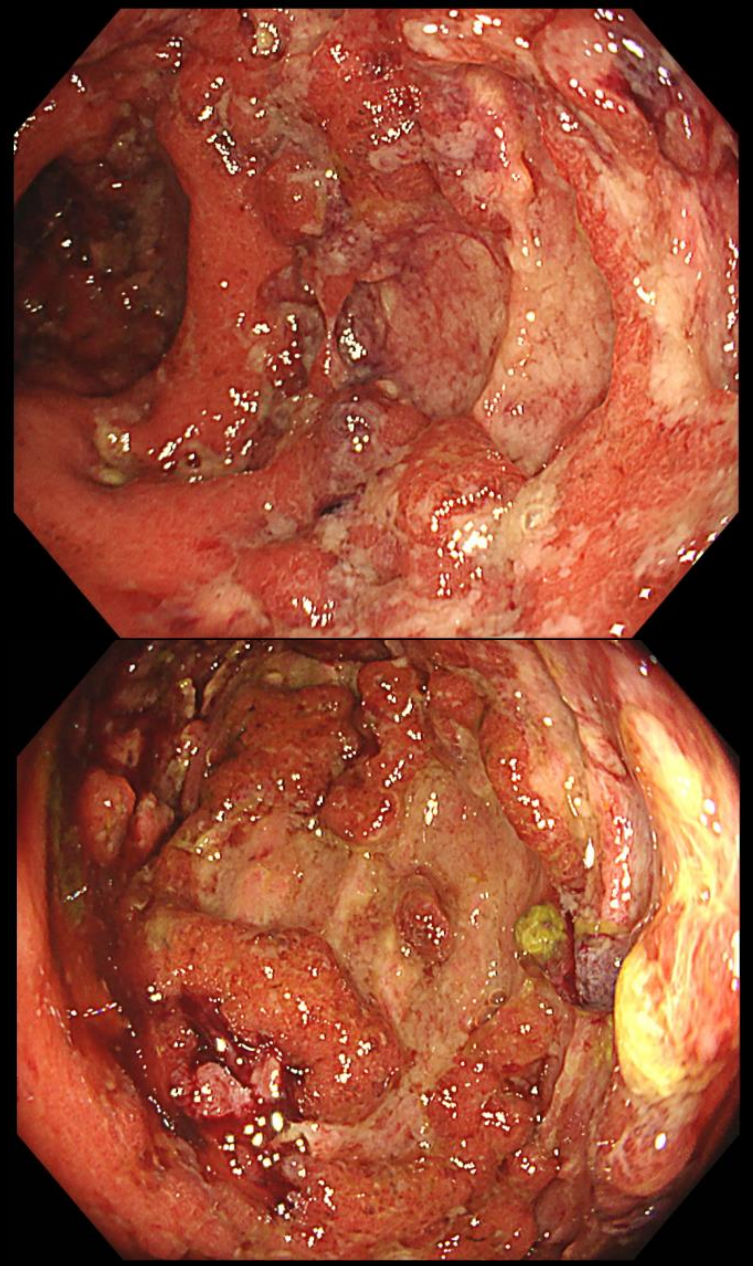
32-year-old female
Pancolitis / acute severe

- Diagnosed with ulcerative colitis, pancolitis type, 2 months earlier
- Initial treatment with prednisolone 60 mg was ineffective
- Clinical relapse occurred during prednisolone tapering

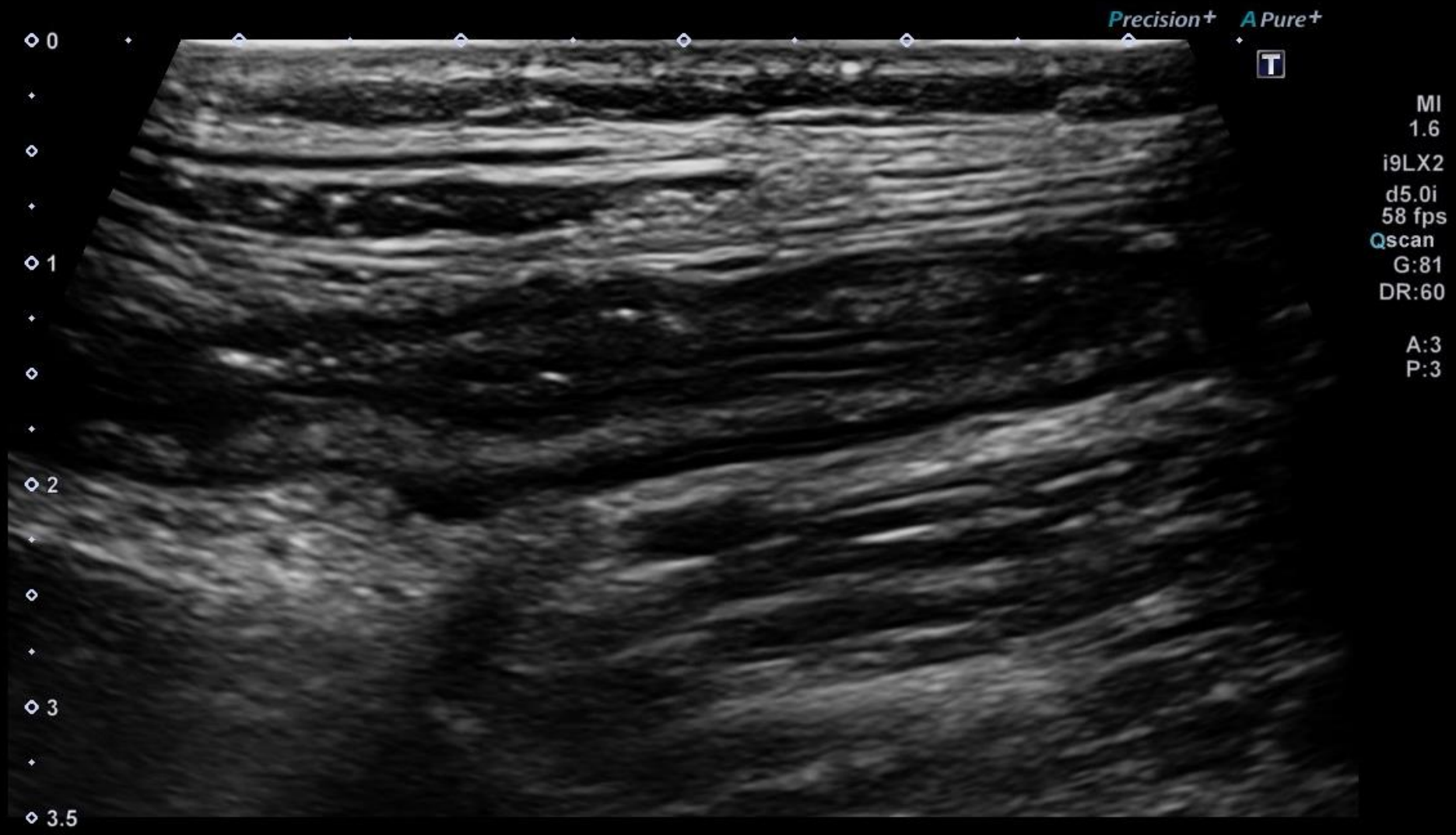
- CD toxin -, stool culture -
- CMV-IgG CLIA+, CMV-IgM± 1.06 (<0.85)

CVMpp65 antigen (C7hrp) 36/100000

- MES 3



international bowel
ULTRASOUND GROUP



(7 MHz linear, CANON Aplio i800)

international bowel
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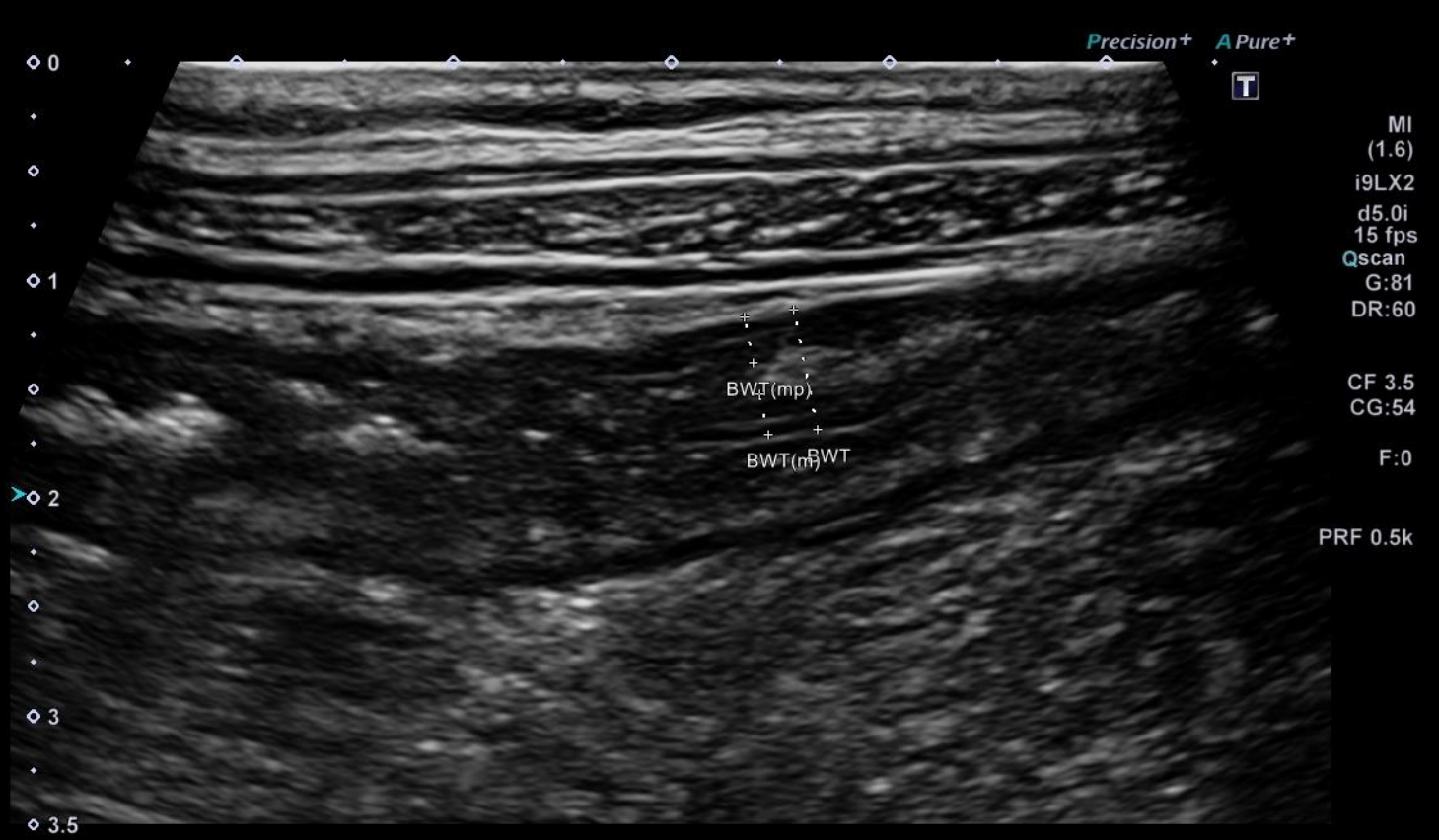

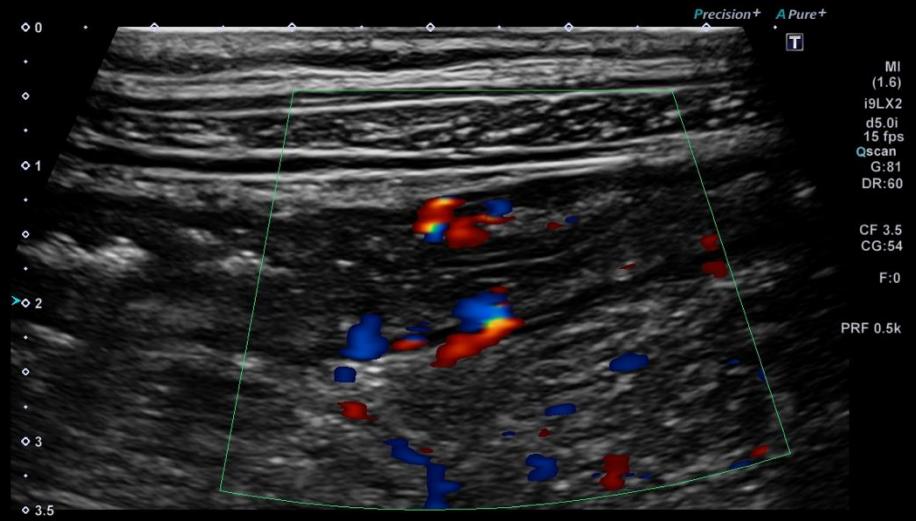

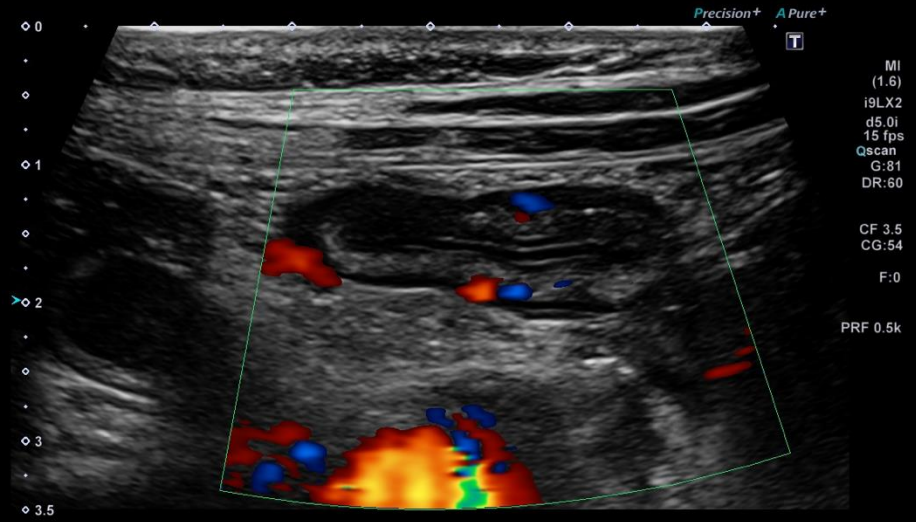

UC							
BWT	5.6mm	CDS	1.00*	MUC	9.8*	MUC(Max)	9.0*
BWT(m)	1.9mm	BWT(sm)	1.6mm	BWT(mp)	2.1mm	SM Index	28.6%

(7 MHz linear, CANON Aplio i800)

- Always consider concomitant infectious enteritis.
- No specific discriminatory IUS findings have been established; however, deep ulcers may be detectable.
- Not all symptom worsening represents a UC flare.
- Check for non-IBD-related causes.

Take-home messages

- In UC, IUS interpretation should integrate BWT, vascularity, wall stratification, haustration, extent, and clinical context.
- In severe UC, IUS can rapidly identify high-risk features and support close monitoring.
- Mild residual activity can be difficult but clinically important, especially when distinguishing remission from minimal inflammation.
- Not all worsening symptoms in UC represent simple UC flare; pitfall cases are essential for advanced learning.

international bowel
ULTRASOUND GROUP

Q&A

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