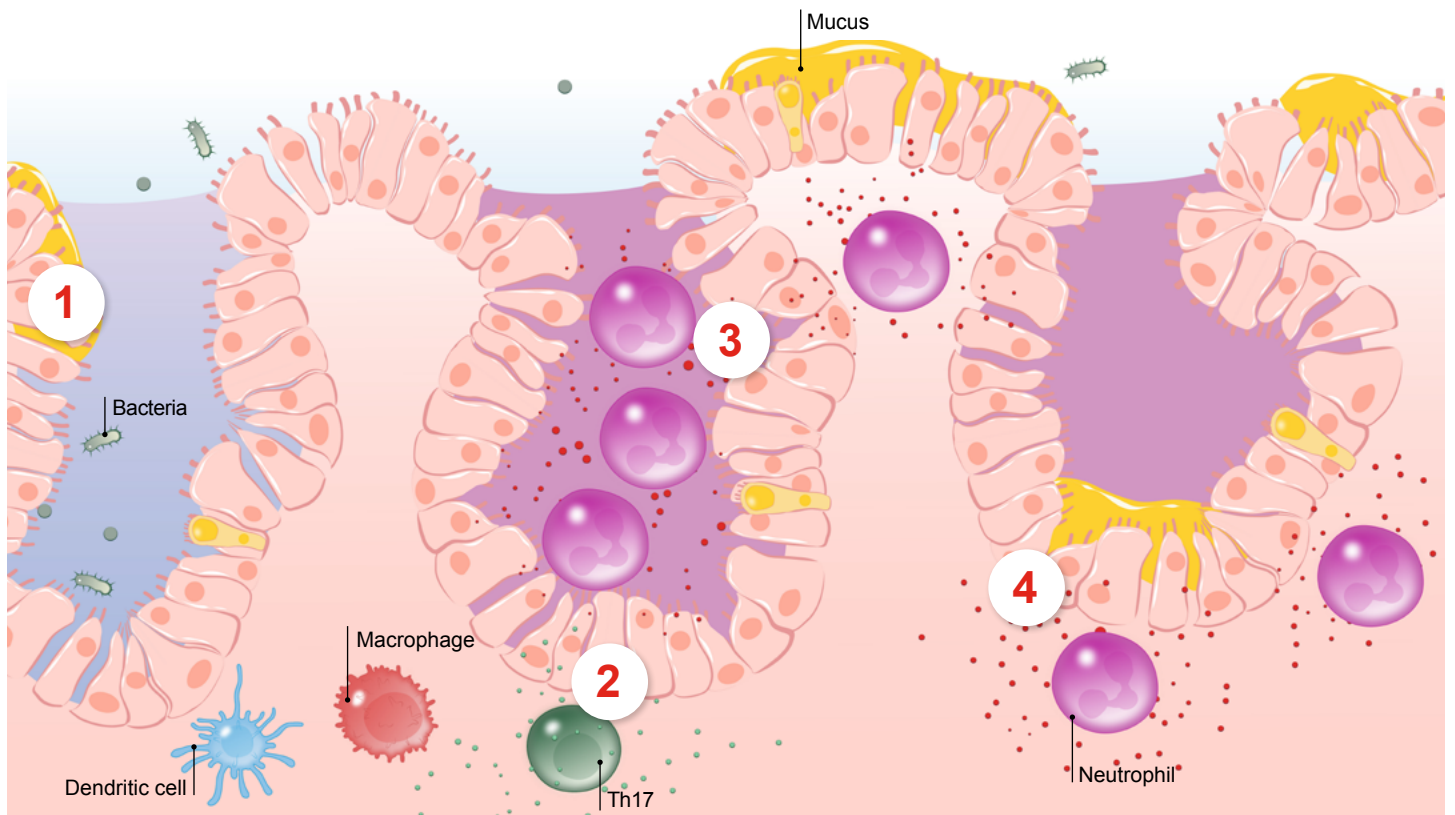


Assessing Inflammation in Crohn's Disease



Changes in cytokine expression drive inflammation in CD^{1,2}



1 Impaired intestinal barrier function allows for translocation of bacteria and microbial products from the gut lumen into the bowel wall, activating an inflammatory response¹

2 Activation of cytokines (eg, IFN, TNF α , IL-1 β , IL-6, IL-23, IL-12, CXCL1/2/5, α 4/ β 7 integrin) causes neutrophils to infiltrate the mucosa^{3,4}

3 Neutrophils accumulate within the mucosa due to impaired regulatory mechanisms^{1,4}

4 Neutrophil degranulation results in the release of calprotectin, reactive oxygen species and toxic molecules.^{5,6} Calprotectin accumulates in stool,⁶ while the reactive oxygen species and toxic molecules amplify inflammatory conditions⁶



Over time, the amplified inflammatory conditions cause cell damage, which may result in tissue remodeling, fibrosis, and the formation of fissures, fistulas and strictures⁷⁻⁹

Tools for evaluating inflammation in CD

These tools reflect the inflammatory process and can guide clinical decisions^{6,10-12}

ENDOSCOPY AND CROSS-SECTIONAL IMAGING:

- **Endoscopy** can be used to visualize and evaluate mucosal lesions⁶
- **CT or MRE** can assess mucosal inflammation, bowel wall thickness, and identify complications (eg, stricture, abscess, and fistula)^{6,9}
- **IUS** offers a noninvasive, radiation-free alternative to assess disease activity and identify complications at POC, which aids in rapid decision making.⁶ IUS can be used in pregnant patients¹⁷

HISTOLOGY VIA BIOPSY: NEUTROPHILS

- The accumulation of **neutrophils** within the intestinal mucosa indicates active inflammation^{5,12}



SERUM BIOMARKER: CRP

- **CRP is a non-specific marker of inflammation.**¹² CRP release from the liver indicates an acute phase immune response (IL-6, TNF α , and IL-1 β)¹¹
- Serum CRP may be used as a marker of disease activity, and relapse¹¹
- 20-25% of patients with CD experiencing a flare do not show an elevated CRP level¹⁴

STOOL BIOMARKER: FC

- **FC is specific to gut inflammation.**¹² Neutrophil degranulation leads to \uparrow FC^{6,15}
- FC is used to assess disease activity, response to treatment and to monitor for relapse¹⁶

CD=Crohn's Disease; CRP=C-Reactive Protein; CXCL=CXC-Motif Chemokine Ligand; FC=Fecal Calprotectin; IFN=Interferon; IL=Interleukin; IUS=Intestinal Ultrasound; MRE=Magnetic Resonance Enterography; POC=Point of Care; ROS=Reactive Oxygen Species; TNF=Tumor Necrosis Factor.

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