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Radiological healing in perianal fistulising Crohn's disease: MRI predictors and disease course

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Background: Perianal fistulising Crohn's disease (CD) is a disabling condition affecting up to 30% of patients. Studies suggest that greater fibrosis in the fistula tract is linked to improved clinical outcomes. This study aims to describe the natural history of perianal fistulising CD, including MRI parameters, and to identify clinical and radiological predictors of relapse and radiological healing

Methods: Pelvic MRIs for perianal fistula performed at CHU Liège, Belgium, from 2018 to 2023 were collected. MRI protocols used 1.5T [Siemens Aera/Sola] or 3T [Siemens Vida] machines, with sequences including T2 TSE, T2 TSE FS, and T1 TSE FS before and after gadolinium injection. The MAGNIFI-CD and modified Van Assche (VA) indices were assessed for each patient. Two blinded radiologists evaluated fistula tract fibrosis. For patients with perianal flare, only the first MRI was analysed (MRI 1). For others, the first and last MRI (MRI 2) within the study period were assessed. Perianal flare was defined as abscess drainage or stoma creation for active perianal CD, and radiological healing as $\geq 80\%$ fistula fibrosis or a MAGNIFI-CD score of 0.

Results: A total of 102 pelvic MRIs from 84 patients were included. The median patient age was 39 years (31–51), with 40% female. The median duration of perianal CD was 52 months (2–144); 26% had a seton at MRI 1, 7% had a stoma, and 41% were on anti-TNF therapy. During follow-up, 22% required abscess drainage. No clinical factors were associated with perianal flare. Univariate analysis identified several MRI 1 radiologic predictors of flare: fibrosis percentage (OR=0.72, $p=0.033$), VA hyperintensity T2 (OR=3.22, $p=0.028$), VA rectal involvement (OR=1.75, $p=0.040$), VA inflammatory mass (OR=1.42, $p=0.022$), VA T1 post-contrast hyperintensity (OR=3.68, $p=0.045$), MAGNIFI-CD score (OR=1.13, $p=0.022$), MAGNIFI T1 post-contrast hyperintensity (OR=1.77, $p=0.031$), and MAGNIFI inflammatory mass (OR=1.40, $p=0.033$). In multivariate analysis, only MAGNIFI T1 post-contrast hyperintensity remained significant (OR=1.77, $p=0.031$). Radiological healing was achieved in 30% at MRI 1 (25/84) and 44% at MRI 2 (8/18). No factors at MRI 1 predicted healing at MRI 2, though T1 post-contrast hyperintensity at MRI 1 showed a trend towards predicting lack of healing (OR=0.11, $p=0.071$).

Conclusion: One-fifth of patients experienced perianal flare during follow-up. Clinical and therapeutic factors did not predict outcomes; only persistent MRI inflammation and low fistula fibrosis were linked to future abscess drainage. Specific MRI features may serve as therapeutic targets in perianal CD management, pending validation in a prospective cohort.