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Inflammatory bowel disease and chronic granulomatous disease: A case report

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Introduction

Chronic granulomatous disease (CGD) is a primary immunodeficiency disorder of phagocytes and is characterised by severe recurrent bacterial and fungal infections as well as dysregulated inflammatory response resulting in granuloma formation and other inflammatory disorders such as colitis.

Aim

To discuss a case of NCF4-related chronic granulomatous disease initially diagnosed with and managed as Crohn's disease.

Learning points

1. An understanding of chronic granulomatous disease as an important differential in inflammatory bowel disease
2. To be aware of unusual presentations of CGD including with negative nitro blue tetrazolium test
3. Treatment considerations in CGD-IBD

Subject

A 10-year-old boy presented in 2016 with symptoms of diarrhoea, abdominal pain, left panuveitis, gum hypertrophy and ulcers on tongue. He had a background of retinal pigmentary changes presumed to be secondary to previous toxoplasma infection. Faecal calprotectin level was raised at 430 µg/g and tTG IgA levels was 19 U/ml with positive anti-endomysial antibodies. Endoscopy revealed villous atrophy in first part of duodenum, and granulomatous inflammation in the terminal ileum, stomach and colon. His bowel symptoms responded to the initial treatment of exclusive enteral nutrition for Crohn's disease followed by gluten-free diet for coeliac disease. He was commenced on Azathioprine in August 2017 but subsequently developed drug-induced pancreatitis and Azathioprine was stopped. He was started on Pentasa in October 2017. He subsequently developed perianal abscess and perianal fistulas. There was some hesitation in commencing immunosuppressants due to previous history of possible toxoplasma infection. Therefore microbiology advice was sought and further blood tests ruled out active toxoplasma infection. Methotrexate was started in September 2018.

In February 2019, he developed recurrent folliculitis in his groin and thighs. His skin swabs grew staphylococcus aureus and treated with oral antibiotics by dermatology team. Due to ongoing and new perianal fistulas, Infliximab was commenced in July 2019. Patient developed groin abscess in early December 2019 and perianal abscess in mid-December 2019 and required surgical drainage along with intravenous antibiotics on both occasions. He then had a readmission to the hospital in January 2020 for recurrent fevers and recurrent groin abscesses. During this admission his immunosuppression (infliximab, methotrexate) was stopped. Apart from intravenous antibiotics, he was also treated with intravenous voriconazole for possible fungal infection due to yeast on perianal swab and atypical appearance of chest X-ray and CT chest.

Results

In light of the multiple infections, extensive immunology workup was done during the January 2020 admission including a nitro blue tetrazolium test which was normal. Blood test was sent for Very Early Onset Inflammatory Bowel Disease gene panel and the results came back 4 months later showing a diagnosis consistent with NCF4-related chronic granulomatous disease. He was thus referred to the immunology team and is currently awaiting bone marrow transplant.

Inflammatory bowel disease in CGD

Inflammatory bowel disease in CGD can be present in as high as 50% of cases. Whilst most of the treatment is based on conventional IBD treatment, specific features of CGD -IBD must be considered., particularly the immunosuppressive nature of many treatments. in one study all 3 of the patients who underwent haematopoetic stem cell transplant were also cured of their IBD.

Conclusion

This case highlights the importance of high clinical suspicion of an alternative diagnosis of immune deficiency in patients with presumed inflammatory bowel disease and recurrent infections. Nitro tetrazolium blue test can be normal in hypomorphic (variant) forms of CGD as in this case. Therefore molecular genetic tests play an important role in accurate diagnosis and disease identification.

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