Certolizumab induced cardiotoxicity in the treatment of ulcerative colitis

Juliana Yang, Kurt Pfeifer, Amar Naik
Medical College of Wisconsin, Milwaukee, WI, United States.

Learning Objectives

1) Recognize clinical applications and side effects of immunomodulator (certolizumab) therapy for inflammatory bowel disease (IBD).

2) Monitor for and identify certolizumab toxicity.

Case

● A 28 year old female with 13-year history of uncontrolled ulcerative colitis (UC). Failed multiple conventional medical regimens.
● Symptom initially controlled with infliximab with good response, but developed serum sickness.
● Infliximab was replaced by certolizumab.
● Symptoms relapsed with persistent active pan colitis.
● Over the next 6 month had 4 hospitalizations, including gram-negative bacillary sepsis, Clostridium difficile colitis.
● Colectomy was performed.
● Developed dyspnea on exertion 15 month after the initiation of certolizumab. Underwent extensive work-up, none cardiac causes ruled out.
● Echocardiogram (Figure 1) showed enlargement of the left ventricle with severe systolic dysfunction (ejection fraction 30-35%).
● Certolizumab was stopped.
● 2 months later, repeat echocardiogram showed a normal-sized left ventricle and only mild systolic dysfunction (ejection fraction of 45-50%). Initial symptom resolved.

Echocardiogram (Figure 1) showed enlargement of the left ventricle with severe systolic dysfunction (ejection fraction 30-35%). She had no prior history of cardiac vascular disorders and other causes or agents to induce cardiotoxicity except certolizumab.

Special thanks to Dr. Michael Curley, MCW Cardiology Department, for providing the echocardiograms.

Discussion

● Ulcerative colitis (UC) is a type of chronic idiopathic inflammatory disease involving the large bowel.
● Diagnosis is made based on clinical features, endoscopic findings (hallmark of symmetrical and continuous inflammation from the rectum onward) and histological findings.
● Serology using ASCA and pANCA have been studied in the diagnosis of IBD and is thought ASCA-/pANCA+ distinguished UC from controls, but the sensitivity was 52% and specificity was 92%. Image studies are typically important for staging, assessing disease progress and response to therapy.
● When considering diagnosis of UC, it is important to exclude Crohn’s disease and infectious etiology as they may confound diagnosis.
● Treatment goal is to induce remission, to maintain remission, to provide adequate nutrition, to minimize disease and treatment-related complications, and to improve the patient’s quality of life.
● Treatment is divided into mild, moderate and severe. Biologics are typically reserved for severe diseases as seen in this patient.
● It is important for primary care physician to follow IBD patient nutritional status closely and monitor bone density and vitamin D level as these patient may frequently suffer malabsorption and on frequent steroid bursts.

Conclusion:

● Certolizumab is a humanized PEGylated anti-TNF-alpha antibody Fab fragment which has been used in the treatment of Crohn’s disease and ulcerative colitis.
● It has shown to improve remission duration and lessen steroid dependence after failure with conventional treatments.
● Side effects such as serum sickness, serious infections, lymphoma, and heart failure as seen in this patient.
● Cardiotoxicity of certolizumab in the treatment of ulcerative colitis can occur in a patient without previous cardiovascular disorder.
● This side effect can be fatal if not detected early but it could be reversible if stopped promptly.
● It is important to evaluate patient’s cardiovascular function before certolizumab administration and regularly monitor cardiac function during the treatment.

References:
