CASE REPORT

Recalcitrant pyoderma gangrenosum treated with parenteral iron sucrose therapy

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Key words: Crohn’s disease; iron sucrose; pyoderma gangrenosum.

INTRODUCTION

Pyoderma gangrenosum (PG) is an idiopathic, ulcerating neutrophilic dermatosis.1 We present a patient with 12 years of peristomal PG recalcitrant to numerous steroids and immunosuppressants who attained complete remission after iron sucrose infusion.

CASE REPORT

A 30-year-old woman with a history of Crohn’s disease presented to the clinic shortly after placement of a diverting ileostomy with peristomal purulence, ulceration, and erythema (Fig 1). Biopsy-proven PG was diagnosed, and she was started on prednisone and intralesional triamcinolone. Over the next 10 years, she was prescribed various combinations of cyclosporine, intralesional triamcinolone, mycophenolate mofetil, dapsone, topical cyclosporine, colchicine, etanercept, and prednisone for repeated peristomal PG flares. These medications prevented severe painful flares but failed to cure the chronic peristomal ulcerations. During this time of multiple medication trials, her Crohn’s disease was in remission, requiring no additional Crohn’s-specific medication. Throughout the course of her treatment, the patient experienced significant fatigue, and her hemoglobin level oscillated between 9.2 and 11.7 g/dL (normal, 12.3-15.7 g/dL) with ferritin levels less than 50 ng/mL (normal, 10-250 ng/mL). Iron studies suggested a combination of anemia of chronic disease and iron deficiency anemia; thus, she received six parenteral iron sucrose infusions over the course of 6 months. After the first 3 infusions, her ferritin level increased from 47 to 198 ng/mL. Her fatigue improved temporarily but shortly returned to baseline, and her PG remained stable. She finished iron therapy in late February of 2013, and her ferritin levels reached 547 ng/mL. In mid-March the patient noted visible improvement in the PG and lasting resolution of her fatigue and malaise. By late June, her peristomal PG had healed completely, and she was able to wean off of mycophenolate and cyclosporine. She continues to remain in remission from PG and Crohn’s today, more than 1 year after resolution of her PG (Fig 2).

DISCUSSION

Anemia is common in patients with PG, with an overall prevalence reported at 65.2% and microcytic anemia reported at 15.5%,2 yet, there are no substantial data investigating the effects of anemia treatment directly on chronic inflammatory disorders. We propose that there may be an inhibitory effect of the iron sucrose itself on the functioning of hyperactive neutrophils and their role in the pathogenicity of PG.

In hemodialysis patients, parenteral iron sucrose infusions have been shown to induce oxidative stress and impair phagocytic activity and oxidative burst capacity of neutrophils.3,4 Neutrophilic function was slightly altered in those with ferritin levels between 100 and 350 ng/mL and significantly altered in patients with ferritin levels greater than 650 ng/mL. Furthermore, Sengoelge et al5 found that iron sucrose significantly inhibited transendothelial migration of neutrophils in vitro. In addition, there may be a downregulatory effect of high ferritin levels on various cytokines that promote inflammation and

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delay wound healing. Studies of PG show elevated levels of matrix metalloproteinase-9, metalloproteinase-10, and tumor necrosis factor-alfa. Overexpression of ferritin has shown to decrease levels of tumor necrosis factor in inflammatory processes, although no data yet exist regarding parenteral iron’s influence on matrix metalloproteinases.

High ferritin levels, as would result from iron sucrose infusions, inhibit neutrophil function, migration, and various inflammatory cytokines. Thus, it is possible that our patient entered remission after iron therapy because of its direct effect on neutrophils and inflammatory mediators. This case could thus reveal an adjuvant treatment option in anemic patients recalcitrant to standard PG therapies, although more investigation needs to be done regarding iron’s effect on various inflammatory mediators.

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