Pyoderma gangrenosum associated with chronic idiopathic myelofibrosis after coronary artery bypass graft surgery

Vinod A. Sebastian, Bryan T. Carroll, Michael E. Jessen

Department of Cardiovascular and Thoracic Surgery, University of Texas Southwestern Medical Center at Dallas, Dallas, TX, USA

Department of Dermatology, University of Texas Southwestern Medical Center at Dallas, Dallas, TX, USA

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Abstract

Pyoderma gangrenosum (PG) is an ulceronecrotizing dermatosis that can occur after minor trauma or surgery and is rare after cardiac surgery. We report a case of PG after coronary artery bypass grafting (CABG) in a patient with chronic idiopathic myelofibrosis (CIMF). Diagnosis was made with punch skin biopsy and he was treated with systemic steroids. His lesions showed remarkable improvement with therapy. Cardiothoracic surgeons need to consider this diagnosis in all rapidly expanding postoperative lesions, especially those that do not improve with debridement or antibiotics or conservative wound care.

Keywords: Pyoderma gangrenosum; Coronary artery bypass graft surgery; Necrotizing lesion

1. Introduction

Pyoderma gangrenosum (PG) is a rare ulceronecrotizing dermatosis that can occur after minor trauma or surgery [1–3]. This complication is rare after cardiac surgery [3, 4]. We report a case of PG after coronary artery bypass grafting (CABG) in a patient with chronic idiopathic myelofibrosis (CIMF).

2. Case report

A 61-year-old male was diagnosed with three-vessel coronary artery disease during an evaluation prior to a urologic procedure. He was referred for CABG. His medical history was notable for a remote stroke, hyperlipidemia, and pancytopenia. He was diagnosed with CIMF two months prior to this presentation. His white blood cell (WBC) count on admission was 3900/μl, hemoglobin and hematocrit were 9.4 g/dl and 28.2% and platelet count was 63,000/μl. He underwent CABG surgery with an uneventful immediate postoperative course.

On postoperative day 4 he developed a fever to 39.4 °C and was started empirically on vancomycin and piperacillin/tazobactam. Blood, urine and sputum cultures were negative. On postoperative day 5 he developed mild erythema at his saphenous vein graft (SVG) harvest site and remained febrile. Bright red indurated plaques expanded rapidly along the SVG harvest site on postoperative day 8.

These lesions developed violaceous necrotic centers and bullae along the wound edges. Due to the necrotizing appearance and rapidly progressing lesions, the SVG site was debrided on the same day. Clindamycin was added to the antibiotic regimen. The following day he developed similar lesions along his sternal wound (Fig. 1) and these were also debrided and cultured. A negative pressure wound dressing (VAC, Kinetic Concepts, Inc, San Antonio TX, USA), was placed on the right SVG harvest site wound and sternal wound. Additional lesions developed at forearm sites of intravenous catheters (Fig. 2).

Persistent worsening of all lesions in spite of all intervention and in the setting of negative intraoperative cultures led to suspicion of PG. A punch skin biopsy was done on postoperative day 12 and histopathology confirmed a neutrophilic dermatitis. The patient was started on solumedrol 40 mg IV BID on postoperative day 14. He showed dramatic improvement in all lesions. His nadir WBC count was 1800 and nadir platelet count was 30,000 on postoperative day 14.

He was switched to oral prednisone 40 mg BID on postoperative day 16 and was tapered gradually over the ensuing weeks. He was discharged home with a negative pressure wound dressing on postoperative day 24. He was subsequently seen in the outpatient clinic on postoperative day 43 and his wounds continued to contract and showed adequate healing granulation tissue.

3. Discussion

PG was first defined by Brocq [5] as ‘phagedenisme geometrique’ and further characterized by Brunsting et al.
sternotomy incision and then at intravenous line insertion sites (Fig. 2). Additional surgical procedures during the active phase of the disease are to be avoided.

PG often mimics a necrotizing infection and may, therefore, be inadequately treated. The diagnosis is based on the clinical appearance of the ulceration, the course of the disease, and the lack of response to treatment with local and systemic antibiotics due to the absence of infectious agents. Skin biopsies in all forms of PG are characterized by a central necrosis accompanied by a massive peripheral neutrophilic infiltration and perivascular and intramural lymphocytic infiltration. Histologic examination of the advancing inflamed border shows dense perivascular lymphocytic inflammation associated with vascular destruction. However, none of the histologic features is pathognomonic [7, 8].

Four types of PG have been described [9]. Our case shares most features with the ulcerative type. The ulcerative type is associated with severely painful ulceration surrounded by an erythematous halo and usually associated with systemic inflammatory bowel, arthritic or hematologic diseases and is commonest on the lower limbs. The pustular type of PG is also painful and associated with pustules surrounded by an erythematous halo, usually associated with ulcerative colitis. The third type is atypical PG that is characterized by painful vesicles, with a tendency to enlarge rapidly in waves with central necrosis and erosion with surrounding halo of erythema. This is usually associated with hematologic dyscrasias. The fourth type is vegetative type of PG, which is usually relatively painless and progresses slowly.

Treatment of PG involves a combination of local wound care and systemic therapy. Systemic treatment begins with the administration of corticosteroids that is continued until the PG lesions stabilize with initiation of healing. As steroids may interfere with postoperative wound healing, one of the challenges in management is the prevention of sepsis in patients with extensive open surgical wounds, especially if associated with systemic disease and pancytopenia. Cyclosporine, which inhibits IL-2 production by T-lymphocytes, has been used in patients in whom disease is refractory to other forms of treatment [10].

4. Conclusions

Cardiothoracic surgeons should consider the diagnosis of PG in all rapidly expanding postoperative lesions, especially those that do not improve with debridement or antibiotics or conservative wound care. Skin biopsy is an expeditious and informative part of a thorough work-up of rapidly expanding lesions in the setting of fever. Rapid initiation of treatment avoids radical debridement of tissues and yields satisfactory results.

References