Management of a superinfected pyoderma gangrenosum after pacemaker implant

Halim Marzak, MD,* Jean-Jacques Von Hunolstein, MD,* Dan Lipsker, MD, PhD,†
Michel Chauvin, MD, PhD, Olivier Morel, MD, PhD, Laurence Jesel, MD*

From the *Université de Strasbourg, Service de Cardiologie, Nouvel Hôpital Civil, Strasbourg, France, and †Université de Strasbourg and Clinique Dermatologique, Hôpital Civil, Strasbourg, France.

Introduction
Pyoderma gangrenosum (PG) is a rare inflammatory neutrophilic dermatosis. We report a case of PG triggered by pacemaker (PM) implant. In the field of cardiac devices, physicians should think about this rare diagnosis in all rapidly expanding postoperative lesions. The delayed diagnosis can lead to serious consequences. Device reimplantation is possible with the help of adequate immuno-suppressive therapies.

Case report
A 72-year-old man without medical history underwent a dual-chamber PM implant in the left prepectoral area for 2:1 atrioventricular block. Immediate course was uneventful and he was discharged the following day. At day 4, he consulted for an inflammatory, infiltrating, and necrotic lesion in the implant area. In the same time, he developed fever (38.1°C), and biological inflammatory syndrome with negative blood cultures and antibiotics (amoxicillin / clavulanic acid, 1 g 3 times/day) were started. An infectious lesion was suspected. A swab of the lesion came back positive after 4 days after implantation. A second anti-TNF-alpha antibody (infliximab at 5 mg/kg) was administered and colchicine (1 mg/day), corticosteroids (1 mg/kg), and antibiotics were continued. Five days after infliximab was given, a right-side dual-chamber PM was successfully reimplanted. The skin of the scar area was clean with no inflammatory syndrome, allowing patient discharge 4 days after implantation. A second anti-TNF-alpha antibody injection (5 mg/kg) was administered 15 days after the first one. Antibiotics were stopped after 2 weeks, corticosteroids were gradually decreased to 0.5 mg/kg, and colchicine was continued for a few months. At 2-month follow-up after PM implant, the skin lesion was cured but still open (Figure 3B). It had been sutured easily 1 month later by the plastic surgeon. One-year follow-up was uneventful.

At day 45, the patient developed septic shock. The area of PM implant, the skin lesion was cured but still open (Figure 3B). It had been sutured easily 1 month later by the plastic surgeon. One-year follow-up was uneventful. At the same time, the PM area remained clean without any inflammatory syndrome.

Discussion
PG is a rare inflammatory neutrophilic dermatosis manifesting as painful ulcers, violaceous necrotic lesions, and sterile infiltration of polynuclear neutrophils in the skin.1 PG can be idiopathic but is often associated with inflammatory bowel diseases,2 hematologic malignancies, and rheumatologic

KEYWORDS Anti-TNF antibody; Corticosteroid; Neutrophilic dermatosis; Pacemaker implant; Pyoderma gangrenosum

Address reprint requests and correspondence: Dr Halim Marzak, Pôle d’activité médico-chirurgical cardio-vasculaire, Nouvel Hôpital Civil, 1, place de l’Hôpital, F-67091 Strasbourg cedex, France. E-mail address: halim.marzak@chr-su-strasbourg.fr.

*Check for updates

https://doi.org/10.1016/j.hrcr.2017.12.006
disorders. We report the case of a patient presenting PG at the site of PM implantation and of PICC line insertion, a phenomenon referred to as pathergy, which is very characteristic of PG. The patient had no medical history and no bowel or hematologic disease. During follow-up, no other associated pathology could be evidenced. Although the diagnosis was rapidly made with the help of dermatologists, and corticosteroids were rapidly introduced with favorable effect on PG lesion, a secondary infection occurred.

The diagnosis of PG is often delayed, after antibiotic treatment fails. The diagnosis of PG should be evoked in any unusual necrotic ulcer despite optimal care. An early diagnosis will help to start early management and corticosteroid therapy onset to limit extension and minimize sequelae. This diagnosis is usually clinical. A cutaneous biopsy is not mandatory and only allows to exclude other pathologies such as infection, vasculitis, and malignancy. Collaboration with dermatologists is crucial.

In case of pyoderma gangrenosum after device implantation, careful reimplantation is possible with the help of adequate associated treatment therapies, usually involving steroids, colchicine, dapsone, cyclosporine, or TNF-blocking agents.

In the field of cardiac device implantation, physicians should think about this rare diagnosis in all rapidly expanding postoperative lesions; postsurgery PG is already a classic entity. The delayed diagnosis can lead to serious consequences, as this initially sterile polymuclear infiltration lesion can later get infected. If the pathophysiological mechanisms are still not clearly elucidated, neutrophilic dermatoses can be assigned to autoinflammatory diseases with abnormal activation of innate immunity. In case of PG after PM implant, careful device reimplantation is possible with the help of adequate associated treatment therapies, usually involving steroids, colchicine, dapsone, cyclosporine, or TNF-blocking agents.

**Figure 1** Pyoderma gangrenosum—specific initial lesion at day 7 after pacemaker implant.

**Figure 2** Pyoderma gangrenosum lesion with start of regression of necrotic lesions at day 20 after pacemaker implant.

resistant forms, other immunosuppressive drugs such as cyclosporine or TNF-blocking agents can be used in combination with systemic corticosteroids. No local treatment is considered effective in PG. Only cleaning with physiological serum and hydrocolloid bandage are recommended in local treatment of PG.

In the field of cardiac device implantation, physicians should think about this rare diagnosis in all rapidly expanding postoperative lesions; postsurgery PG is already a classic entity. The delayed diagnosis can lead to serious consequences, as this initially sterile polymuclear infiltration lesion can later get infected. If the pathophysiological mechanisms are still not clearly elucidated, neutrophilic dermatoses can be assigned to autoinflammatory diseases with abnormal activation of innate immunity. In case of PG after PM implant, careful device reimplantation is possible with the help of adequate associated treatment therapies, usually involving steroids, colchicine, dapsone, cyclosporine, or TNF-blocking agents.

**KEY TEACHING POINTS**

- **In the field of cardiac device implantation,** physicians should think about the rare diagnosis of pyoderma gangrenosum in all rapidly expanding postoperative lesions. A delayed diagnosis can lead to serious consequences. Early diagnosis helps to start early corticosteroid treatment onset.
- **Pyoderma gangrenosum** can be idiopathic but is often associated with inflammatory bowel diseases, hematologic malignancies, and rheumatologic disorders. Further investigations should be done to diagnose associated pathologies.
- **The diagnosis of pyoderma gangrenosum** is clinical. The main differential diagnosis remains infectious lesions. Cutaneous biopsy is not mandatory and only allows to exclude other pathologies such as infection, vasculitis, and malignancy. Collaboration with dermatologists is crucial.
- **In case of pyoderma gangrenosum after device implantation,** careful reimplantation is possible with the help of adequate associated treatment therapies, usually involving steroids, colchicine, dapsone, cyclosporine, or TNF-blocking agents.

Oral systemic corticosteroid (0.5–2 mg/kg/day) is considered as the first therapeutic option. In case of aggressive and
**Figure 3**  
A: The patient developed a new pyoderma gangrenosum lesion on the left arm at a peripherally inserted central catheter line insertion.  
B: At 2-month follow-up after pacemaker implant, the skin lesion was cured but still open.

**References**

1. Marzano AV, Borghi A, Meroni PL, Cugno M. Pyoderma gangrenosum and its syndromic forms: evidence for a link with autoinflammation. Br J Dermatol 2016;175:882–891.

2. Selvapatt N, Barry J, Roberts PR. Pyoderma gangrenosum complicating an implantable cardioverter defibrillator wound in a patient with ulcerative colitis. Europace 2009;11:1482.

3. Craig FF, Thomas KS, Mitchell EJ, et al. UK Dermatology Clinical Trials Network’s STOP GAP trial (a multicentre trial of prednisolone versus ciclosporin for pyoderma gangrenosum): protocol for a randomised controlled trial. Trials 2012;28:51.

4. Brooklyn TN, Dunnill MG, Shetty A, et al. Infliximab for the treatment of pyoderma gangrenosum: a randomised, double blind, placebo controlled trial. Gut 2006;55:505–509.