Case report

Anesthetic Considerations in a Patient with Psoriasis Undergoing CABG Surgery

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Abstract

Psoriasis is a systemic inflammatory skin disease affecting up to 3% of the population. Skin lesions are symmetric erythematous papules and plaques with sharp demarcation covered with silvery white scales in scalp, elbows, knees, fingers and sacral areas. Metabolic diseases such as obesity and diabetes are more common in psoriatic patients. Strong evidence suggests T lymphocyte based immunogenesis and an increased amount of proinflammatory cytokines including IL-1, IL-6, IL-8 and TNF- alpha were detected in psoriatic plaques. We report a 51-year-old male patient with a history of psoriasis for 30 years scheduled for coronary artery bypass grafting surgery and discuss the anesthetic implications in such patients.

Keywords: Psoriasis, Anesthesia, CABG, T cell

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Introduction

Psoriasis, a skin disease is a dilemma if surgery and perioperative care is going to be provided. Here we discuss a man with psoriasis undergoing CABG.

Case Report

A 51-year-old male patient with a history of psoriasis for 30 years was referred to a tertiary university hospital with complaint of chest pain and was scheduled for coronary artery bypass grafting surgery. He had a one-year history of diabetes and a 7 years history of hypertension and a 15 pack-year history of smoking. The psoriatic lesions were on the limbs and the posterior part of the trunk with spotty bleeding in some parts due to removal of silvery scales in various involved areas (Figures 1-3). The patient did not receive any medications regarding the psoriasis disease. Head and neck examination for assessment of difficult airway was normal. The standard lab test values were within the normal range. The angiographic study showed coronary artery involvement. Transthoracic echocardiography showed an ejection fraction of 35 to 40%. Carotid vessel angiography was normal. A lateral neck X-Ray was done to rule out the involvement of cervical spine. No evidence of psoriatic arthritis was detected during physical examination. Dermatology consult was done and due to lack of lesions in surgical site, there seemed to be no

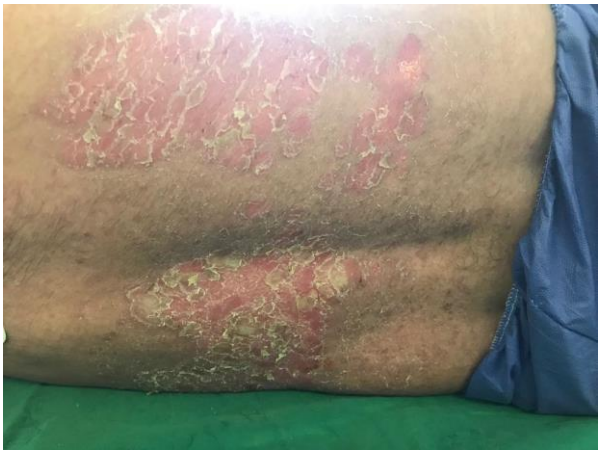

Figure 1. Psoriatic lesions on the torso.

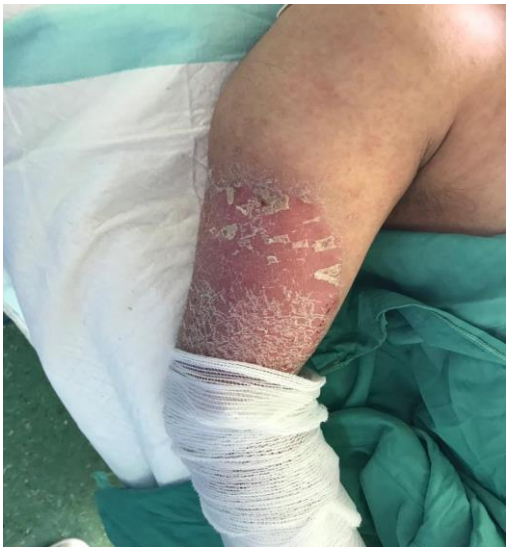

Figure 2. Psoriatic lesions on the upper limb.

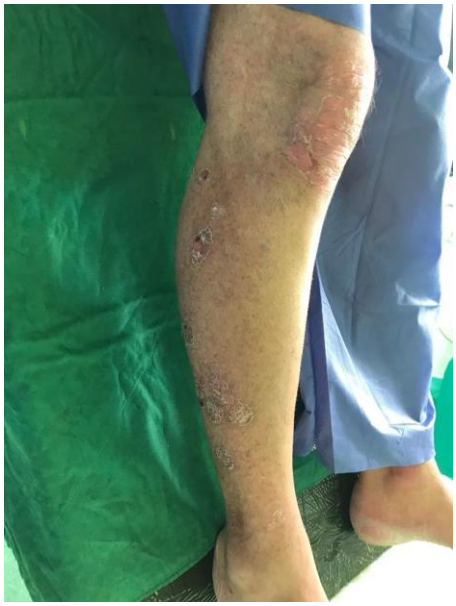

Figure 3. Psoriatic lesions on the lower limb.

complications regarding this issue. The prophylactic dose of antibiotic and the stress dose of corticosteroids were administered one hour prior to surgery. All necessary precautions were in place to minimize the chance of skin injuries to prevent the Koebner phenomenon. The patient was monitored properly and the anesthesia was administered according to the current protocols for cardiac surgery anesthesia. The perioperative period was uneventful and the patient was transferred to cardiac ICU where he was extubated 24 hours later. He was discharged 10 days later with no exacerbation of psoriasis disease.

Discussion

Psoriasis is a systemic immune-mediated skin disease with prevalence of up to 3 percent (1). It affects 125 million people worldwide and afflicts men and women equally (2). The disease is more prevalent among people living in high altitudes and cold climates and less prevalent among people who have greater sun exposure. Psoriasis has two peaks of age distribution the earlier one is between 15 to 30 years of age which is associated with more severe disease and the later peak is between 50 to 60 years of age (3). The early onset disease with severe progression is accompanied by human leukocyte antigen (HLA) factors (1, 4). The lifetime risk for developing psoriasis is 4% in a patient with no familial history, 14-28% if one parent is afflicted and 41-65% if both parents are afflicted. Penetration of psoriasis is higher if the carrier is the father (1, 3, 4). Skin lesions in psoriasis are caused by hyperproliferation of keratinocytes without differentiation and epidermal hyperplasia, which is triggered by leukocyte infiltration (2). Classically lesions are symmetric erythematous papules and plaques with sharp demarcation covered with silvery white scales in scalp, elbows, knees, fingers and sacral areas. In some patients, it afflicts the entire integument including palms, soles fingernails and oral mucosa. The disease has some variant forms including chronic plaque, gut Tate, pustular and erythroderma.

Koebner phenomenon also known as isomorphic response is formation of new lesions at the site of trauma that occurs one to two weeks after the injury in all - or – none pattern. Several factor such as emotional stress, certain medications and infections can trigger psoriatic lesions (1, 3). Other components such as contact dermatitis, eczema, irritant dermatitis, herpes zoster, impetigo contagiosa and sunburns can contribute to activation of the disease process. Upper respiratory tract infections, streptococcal infections and mycotic infections are among prevalent infectious causes triggering the disease. Many different

medications can aggravate the disease including systemic corticosteroids, beta-adrenergic antagonists, lithium, non–steroidal anti-inflammatory drugs and anti–malarial. Strong evidence suggests T lymphocyte based immunogenesis and an increased amount of proinflammatory cytokines including IL-1, IL-6, IL-8 and TNF-alpha were detected in psoriatic plaques (1, 4).

Comorbidities: Twenty-five percent of patients demonstrate inflammatory seronegative spondylo-arthropathy with tenderness swelling and stiffness of joints and surrounding tendons and ligaments. Enthesitis (nail involvement) is frequently seen especially in patients with distal interphalangeal joint involvement. Patients afflicted with psoriasis are prone to autoimmune diseases and dysregulation of TNF-alpha and are more likely to develop Crohn's disease. Psoriasis is also more prevalent in families with multiple sclerosis (3). Like other inflammatory diseases such as rheumatoid arthritis and systemic lupus erythematosus, psoriasis is accompanied by increased atherosclerosis and risk of coronary artery disease (2). The relative risks of myocardial infarction and stroke are increased in psoriatic patients especially in younger patients with more severe disease which can cause a 3 to 4 years decrease in life expectancy (2, 3, 5). Metabolic diseases such as obesity and diabetes are more common in psoriatic patients. The up-regulation of pro-inflammatory mediators influence the adipocyte homoeostasis that leads to disturbed adipokine profile. Meanwhile inflammation associated with psoriasis increases insulin resistance leading to endothelial dysfunction, atherosclerosis and coronary events (1, 3-5). Psoriatic patients also have a higher prevalence of abdominal obesity and hypertriglyceridemia (3). Successful treatment with methotrexate can deduct the rate of myocardial infarction in psoriatic patients. TNF-alpha inhibitors decrease insulin resistance and have a higher protective effect against the development of diabetes and cardiovascular disease (1, 2, 4). Some studies show psoriatic patients have an increased risk for developing lymphoma. Near to 60% of psoriatic patients have mood disorders such as depression and a large proportion of these patients may actively commit suicide (3).

Treatment: topical treatments include vitamin D3 analogues, corticosteroids and phototherapy including UVB and PUVA. Systemic treatments consist of conventional drugs such as methotrexate, retinoid agents and cyclosporine A and new drugs including humanized monoclonal antibodies which inhibit T-cell activation such as Efalizumab (1).

Anesthetic considerations: holding to account the systemic inflammatory nature of the disease detailed medical history should be obtained and trill physical examination should be performed. It should include the patient's age, the duration of the disease and any co-morbidities, current functional status and current medications including steroids.

Obesity is a known characteristic of psoriatic patients that increases the risk of surgical site infections and deep vein thrombosis. Psoriasis is associated with metabolic syndrome risk factors such as high levels of triglycerides and fasting glucose, low levels of high-density lipoprotein cholesterol, elevated blood pressure and abdominal obesity. Psoriasis is an independent risk factor for myocardial infarction therefore preoperative assessment should include trill evaluation of cardiac status. Cervical spine involvement should be assessed and lateral neck X-Ray should be obtained. Assessment of skin involvement in surgical site is imperative. Surgical incisions should not involve psoriatic lesions due to increased risk of infections (1, 4, 5). *Staphylococcus aureus* is present in lesions of 20 to 50 percent of psoriatic patients. Therefore, regional anesthesia or intravenous cannulae should not be directed at these sites to prevent septicemia. Anesthesiologist must protect the skin in perioperative period. Tapes must be used in most necessary cases and intravenous catheters should be sutured in place or wrapped with web roll (1) Pruritus after administration of neuraxial opioids is an adverse effect with an incidence rate of 0-100%. It seems to be lower in epidural use of opioids versus spinal administration (1). Naloxone and propofol are effective in managing the opioid–induced pruritus (6). Due to chronic corticosteroid therapy in psoriatic patients stress dose of corticosteroids should be provided during the perioperative period (1). Antibiotic prophylaxis is recommended in psoriatic patients undergoing long procedures to prevent surgical site infections. Third generation cephalosporin agents are the drug of choice and should be administered 60 minutes prior to the skin incision. Additional intra-operative dose should be used for prolonged procedures and in case of significant blood loss during the surgery (1, 4, 5). Perioperative adjustment of disease modifying drugs must be done. Methotrexate must be continued preoperatively. Leflunomide should be discontinued at least 2 weeks prior to the surgery due to its association with increased perioperative infections. Based on current guidelines biologic agents should be discontinued based on their half-lives and should be restarted after the surgery and the removal of stitches that is usually

about two weeks later. Etanercept should be discontinued for 2 weeks, adalimumab for 3 to 4 weeks and infliximab for 6 to 8 weeks (4-6). Renal and liver function tests should be assessed when immunosuppressant or methotrexate have been administered (1).

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Conflicts of Interest

The authors declare that there are no conflicts of interest.

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