Coronary Artery Bypass Grafting in a Patient Initially Presenting with Systemic Lupus Erythematosus

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We report a 51-year-old man who was diagnosed with concomitant coronary artery disease and systemic lupus erythematosus (SLE). He required urgent coronary artery bypass grafting (CABG) before the initiation of steroid therapy. Steroid therapy was initiated on postoperative day 2 due to the aggravation of SLE. However, he displayed persistent infection and fever, and the steroid dose was gradually decreased, resulting in the worsening of SLE by postoperative day 21. We closely monitored his infection status and renal function and regulated the steroid dose accordingly. The patient stabilized and was discharged on postoperative day 60 without further complication. Meticulous postoperative management is required in acute SLE patients who need open heart surgery.

Keywords: coronary artery bypass grafting, systemic lupus erythematosus, steroid

Introduction

Monitoring organ failures associated with active systemic lupus erythematosus (SLE) in patients who also require open heart surgery in the perioperative period is essential. We report a patient with SLE who underwent an urgent coronary artery bypass graft (CABG) before commencing steroid therapy, leading to difficult perioperative management. Although several reports describe CABG for patients with SLE after the initiation of steroid therapy, few reports describe patients with active SLE who underwent CABG before such therapy is started.

Case Report

A 51-year-old man presented with dyspnea on effort and was referred to a local hospital. Electrocardiography showed an inverted-T wave in the II, III, aVF, and V4-6 leads. Coronary angiography showed complete occlusion of the left anterior descending artery and moderate to severe stenosis in the right coronary artery (Fig. 1). Blood tests showed moderate renal failure (creatinine (Cr), 1.62 mg/dl); low complement proteins C3, 73 mg/dl (normal range, 86–160 mg/dl); C4, 15 mg/dl (normal range, 17–45 mg/dl); CH 50, 18.1 mg/dl (normal range, 25–46 mg/dl); positive antinuclear antibodies; and elevated anti-DNA antibodies (22.0 IU/ml; normal range, 0–6 IU/ml). Consequently, he was diagnosed with stable angina with two-vessel disease and SLE and was referred to our hospital for the treatment of both conditions. On admission, mild pancytopenia (Hb, 9.3 g/dl; platelet count, 89000/μl) was observed in addition to mild renal failure, some protein in the urine, and low complement proteins. We decided on urgent off-pump CABG surgery before the induction of steroid therapy, because after admission, the patient’s chest pain had worsened and continued to persist, even while the patient was at rest. Off-pump CABG with the left internal thoracic artery to the left anterior descending artery and saphenous vein graft to the posterior descending artery was performed.

The postoperative course was initially uneventful. However, on postoperative day 2, the patient developed...
Fig. 1 Coronary angiography showed complete blockage of the left anterior descending artery (arrow) and moderate stenosis in the right coronary artery (arrow head).

Fig. 2 Coronary angiography demonstrated patency of the left internal mammary artery and the saphenous vein graft.

continuous, high fever (>39°C), blood tests showed deterioration of renal function (Cr, 2.26 mg/dl), and protein levels had increased in the urine (2+). Based on the diagnosis of deteriorated SLE, the patient was subsequently administered 60 mg/day prednisone intravenously. After the induction of prednisone, complement proteins and renal function normalized. However, a low-grade fever persisted, and *Staphylococcus capitis* was detected in the drainage tube of the mediastinal space on postoperative day 5. However,
inflammatory signs including procalcitonin serum level were almost normal (WBC, 7400/μl; C-reactive protein (CRP), 7.43 mg/dl). Computed tomography did not reveal any findings of mediastinitis. Therefore, on the basis of suspected mediastinitis, the prednisone dose was tapered, and we suspended treatment on postoperative day 10. Thereafter, complement protein levels and renal function remained normal, while CRP and fever gradually improved over 10 days.

However, on postoperative day 21, the patient displayed systemic eruption, pancytopenia (WBC, 1730/μl; Hb 9.0 g/dl), low complement proteins (C3, 69 mg/dl; C4, 16 mg/dl), and protein in the urine (2+). Prednisone at 30 mg/day was again administered to treat the presumed worsening of SLE, resulting from the suspension of steroid therapy. On the resumption of prednisone therapy, complement proteins and renal function had improved (Fig. 2), and the patient’s condition stabilized. Coronary angiography demonstrated that the left internal thoracic artery to the left anterior descending artery, and the saphenous vein graft to the posterior descending artery were patent (Fig. 3). Finally, the patient was discharged on postoperative day 60 without further complications.

Discussion

SLE is an autoimmune, connective tissue disease that can affect all organ systems. Coronary artery disease occurs in 8.3% of patients with SLE.1 Although there have been some reports of CABG (with acceptable morbidity and mortality) for treating coronary artery disease in SLE,2–8 most reports are on patients after the induction of steroid therapy; thus, perioperative management has not been addressed in detail.6,7 A collective series of patient data obtained from several hospitals in California showed that the in-hospital mortality rate of CABG in 70 SLE patients was 5.7%, which was not significantly different from mortality in patients without SLE.9

Only 1 report has described CABG prior to initiating steroid therapy in SLE. The report described a 59-year-old patient who had been diagnosed with active SLE and coronary artery disease,10 who underwent CABG before steroid therapy because of acute coronary syndrome. As a result of perioperative renal failure, 60 mg/day prednisone was initiated for SLE, but the patient died from sepsis caused by pneumonia. The authors concluded that, in active SLE, careful attention to infection is needed, since the production of antibodies to foreign bodies decreases while the production of autoantibodies increases. In the present case, we started steroid therapy due to worsening SLE but had to suspend this therapy because of persistent infectious disease. During the suspension of steroid therapy, the activity of SLE was carefully monitored, and markers of inflammation, renal function, complement proteins, and protein in the urine were routinely checked. Consequently, we were able to resume prednisone treatment for the recurrence of SLE earlier. This approach allowed us to overcome the worsening of SLE, and the patient was discharged on postoperative day 60.

Conclusion

In summary, when emergency surgery is required in a patient with active SLE and coronary artery disease simultaneously, meticulous perioperative management is needed. Frequent monitoring of the activity of SLE, infection status, renal function, complement proteins, and protein in urine is very important.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

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Authors’ Contributions

All authors critically read, discussed, and approved the final draft of the manuscript.

Disclosure Statement

The authors declare that they have no competing interests.

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