CASE REPORT – OPEN ACCESS

International Journal of Surgery Case Reports 32 (2017) 32–35

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Emergency valve surgery for infective endocarditis complicated by acute intracranial hemorrhage: A case report

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ARTICLE INFO

Article history:
Received 4 January 2017
Received in revised form 5 February 2017
Accepted 5 February 2017
Available online 11 February 2017

Keywords:
Infective endocarditis
Intracranial hemorrhage
Emergency valve surgery
Case report

ABSTRACT

INTRODUCTION: Optimal timing of surgical treatment for infective endocarditis (IE) complicated by intracranial hemorrhage remains controversial.
PRESENTATION OF CASE: A 43-year-old man with IE received appropriate antibiotic therapy but had recurrence of cerebral infarction and intracranial hemorrhage (ICH). Emergency valve surgery was performed 2 days after ICH onset because of heart failure and recurrence of cerebral complications. Postoperatively, he showed no neurologic symptoms; neuroimaging showed no enlargement of ICH.
DISCUSSION: Postoperative risk of neurologic deterioration may be relatively lower than previously thought in patients with IE who undergo surgery within 1 month after ICH onset.
CONCLUSIONS: Emergency surgery in patients with ICH is justified in cases of multiple indications for such small ICH. Further evaluation regarding the risk of subsequent hemorrhage in patients with ICH who require emergency valve surgery is warranted.

1. Introduction

Cerebrovascular complications occur in 20–40% of patients with infective endocarditis (IE) [1,2]. Moreover, in cases complicated by intracranial hemorrhage (ICH), because of the high risk of postoperative neurologic deterioration due to systemic heparinization during valve surgery, current guidelines recommend that surgical treatment should be delayed for at least 1 month [1]. However, if the patient has other indications for emergency surgery, determining the appropriate timing of surgery is difficult.

Several articles have reported a much lower risk of neurologic deterioration than previously thought in patients with IE who undergo surgery within 1 month after ICH onset [3–7]. Here, we present a case of IE that required surgical treatment 2 days after ICH onset, and we report it in line with the SCARE criteria [8].

2. Presentation of case

A 43-year-old man with a 2-week history of fever was admitted to a local hospital. He had no medical history of hospitalization. Blood analysis revealed an increased C-reactive protein level (8.2 mg/dL) and leukocyte count (11,500/μL). Blood cultures were positive for *Streptococcus mitis*. An echocardiogram showed 8.5-mm long vegetation on the anterior leaflet of the mitral valve and moderate mitral regurgitation.

At the time of IE diagnosis, a systemic computed tomography scan showed no evidence of infarction in any organ. Thus, the patient initially received antibiotic therapy comprised of penicillin G (24×10^6 mg/day) and gentamicin (60 mg/day). Brain magnetic resonance imaging (MRI) performed after 4 days to detect further small cerebral infarctions showed a 0.7-cm acute cerebral infarction (CI) in the right putamen. After an additional 7 days of antibiotic therapy, brain MRI scan showed recurrence of CI (1.0 cm) in the right frontal lobe (Fig. 1A). Thus, he was referred to us for surgical treatment.

Echocardiography showed enlargement of vegetation on the mitral valve and worsening of mitral regurgitation due to prolapse of the anterior leaflet. He had indications of emergency surgery for recurrent cerebral infarction, but a new ICH in the infarction lesion in the right frontal lobe was observed on the brain MRI scan (Fig. 1B). Therefore, we decided to delay surgery. Two days post-admission, he had progression of heart failure, and the chest radiograph showed worsening of congestion. After the risk of subsequent hemorrhage was discussed between the neurologist and patient, the patient consented to undergo emergency valve surgery 2 days after ICH onset. He had no neurologic symptoms preoperatively.

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http://dx.doi.org/10.1016/j.ijscr.2017.02.004

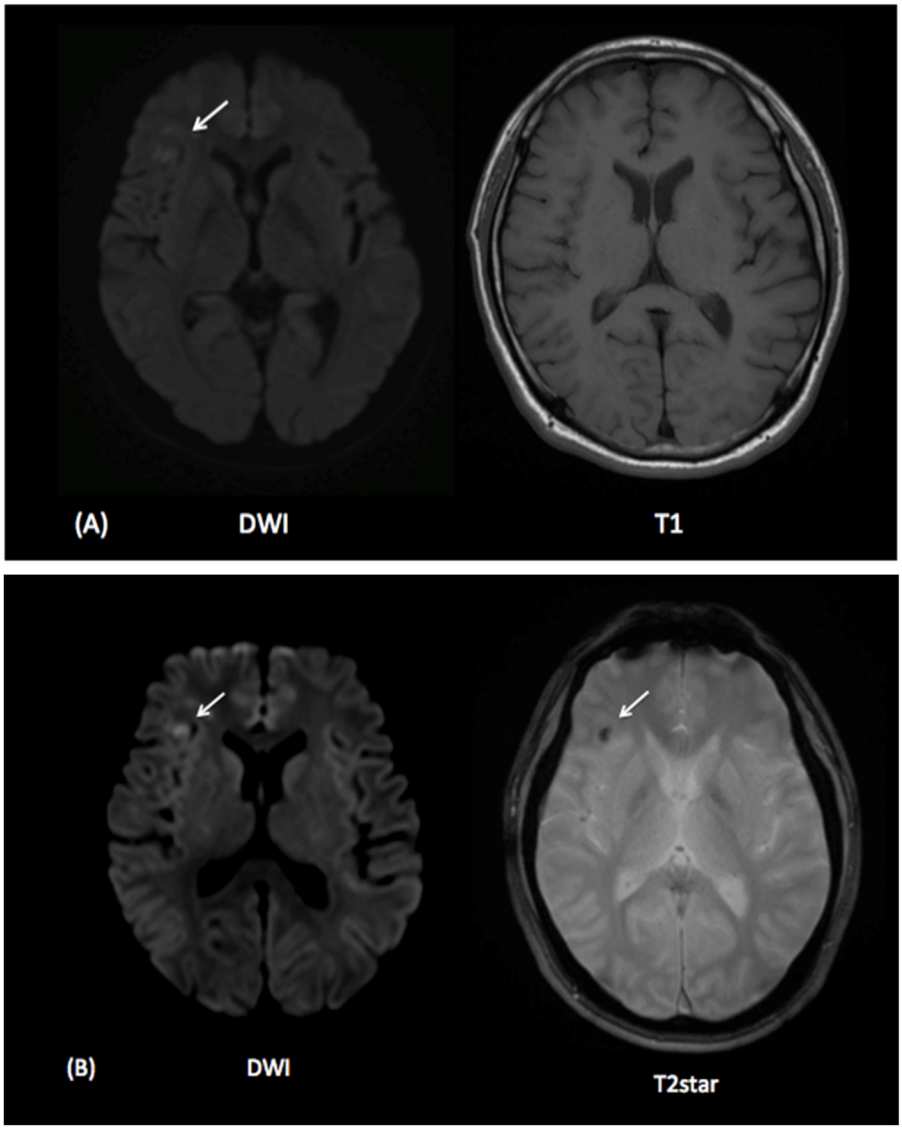

Fig. 1. (A) Brain magnetic resonance imaging (MRI) scans obtained 11 days after antibiotic therapy. (Left) Axial diffusion-weighted image (DWI) showing a high-intensity lesion in the right frontal lobe (arrow). (Right) Axial T1-weighted image showing no hemorrhage in the same lesion. (B) Preoperative brain MRI scans obtained on admission at our hospital. (Left) Axial DWI showing a high-intensity lesion in the right frontal lobe (arrow). (Right) Axial T2-star-weighted image showing microhemorrhage in the same lesion (arrow).

2.1. Intraoperative procedure

The patient was placed in spine position on the operating table. After intubation, median full sternotomy was performed. Valve surgery was performed under usual cardiopulmonary bypass with systemic heparinization and normal tepid temperature. The activated clotting time was maintained more than 450 s during cardiopulmonary bypass. The mitral valve was exposed through left atriotomy; the vegetation was attached to mitral leaflets in A2. A part of A3 was defective, and A2 prolapse due to torn chordae was evident (Fig. 2). Mitral valve repair was performed successfully with vegetectomy and reconstruction of the mitral leaflet, using an autologous pericardial patch. The total aortic cross-clamp time and cardiopulmonary bypass time were 148 min and 194 min, respectively.

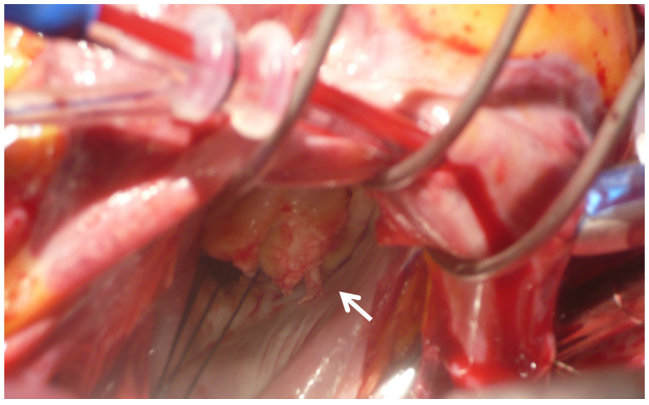

Fig. 2. Intraoperative photograph of the mitral valve. Mitral vegetation is attached to mitral leaflets in A2 (arrow). A2 prolapse due to torn chordae is observed.

2.2. Postoperative results

One week post-surgery, the neuroimaging study showed neither enlargement of the hemorrhagic lesion nor hemorrhagic transfor-