The Egyptian Cardiothoracic Surgeon

https://doi.org/10.35810/ects.v1i1.35

Vol. 1, No. 1, 19 - 22

Case Report

Right-sided infective endocarditis complicating central venous line insertion: a case report

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Abstract

Infective endocarditis is a serious and potentially fatal complication of central venous line (CVL) placement in patients with diseased hearts. A man of 59 was admitted because of fever and dyspnea of 5 days duration. He was a known case of ischemic cardiomyopathy with frequent admissions to a local hospital. Two months earlier, a CVL was placed in right subclavian vein for drug administration. On examination, he was febrile and hypotensive with a systolic murmur in tricuspid and mitral areas. CVL- guide wire was radiographically visible. White blood cells and C-reactive protein were elevated. Echocardiography showed big vegetation on tricuspid valve (TV), severe mitral and tricuspid regurgitation and dilated left ventricle whilst coronary angiography revealed 3-vessel disease. Antibiotic therapy was followed by an open heart surgery during which the guide wire and valve vegetation were removed, TV was repaired, mitral valve was replaced and coronary artery bypass grafting was performed. Culture of blood, valve tissue and guide wire grew Staphylococcus Epidermidis. Despite intensive medical and surgical therapy, the patient succumbed on the 4th postoperative day.

KEYWORDS

Infective endocarditis, central venous line, guide wire, case report

Article History

Submitted: 30 Dec 2018
Revised: 18 Jan 2019
Accepted: 9 Feb 2019
Published: 20 Feb 2019

Introduction

Infective endocarditis (IE) is a serious infection of the endocardial surface of the heart. It usually refers to infection of one or more heart valves or infection of an intra-cardiac device [1]. Health care associated IE is becoming more common. Its incidence is increasing with the increased use of central venous catheters (CVC) particularly in intensive care patients [2-7]. Herein, we present a case of IE in a patient with ischemic cardiomyopathy (ICM) and forgotten CVL guide wire. Despite medical and surgical therapy, the patient died on the 4th postoperative day. The case is discussed in view of the relevant literature to shed light on this serious and potentially fatal complication of CVL placement.

Case presentation

A man of 59 was brought to our hospital on July 2, 2018 because of fever, progressive shortness of

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Figure 1: Non-blanching erythematous lesions: (A) palms (B)soles

breath (SOB) and a decline in his mental status of 5-days duration. That was preceded by an accidental stepping on a nail for which he hasn't sought a medical care. The patient was a known case of hypertension (HTN), dyslipidemia and ischemic cardiomyopathy (ICM). He used to be hospitalized every now and then for stabilization of his condition. Two months prior to his presentation, he was admitted to a local hospital due to an acute exacerbation and received IV medications through a CVL.

On examination, the patient was drowsy, febrile and hypotensive. His temperature was 38.2°C, Blood pressure; 75/60 mm Hg, Pulse rate; 120 beats/min, respiratory rate; 25 breaths/minute and oxygen saturation (SPO2) of 82% on room air. Chest examination revealed crackles up to mid zone and a pan-systolic murmur in the mitral and tricuspid areas. There were non-blanching erythematous lesions on the extremities especially on the soles and palmer aspect of fingers (**Figure 1 A and B**) beside an infected wound on the left sole.

Admission laboratory tests revealed an elevated WBC count (20,000/mm3), mild anemia (Hb=10.9 g/dL) and an elevated C-reactive protein (CRP) (7.9 mg/dL). The trans-thoracic echocardiography (TTE) revealed dilated left ventricle (LVEDD=70mm), severe systolic dysfunction and severe mitral and tricuspid regurgitation beside a big vegetation on tricuspid valve and a patent foramen ovale (PFO). Chest x-ray showed congested lung in addition to a missed guide wire extending from right subclavian vein down to the inferior vena cava (IVC) (**Figure 2**). Coronary angiography showed a three-vessel disease.

Blood culture grew Staphylococcus Epidermidis for which intravenous Meropenem 1g t.d.s and Vancomycin 1.5 g b.i.d were administered and continued for 2 weeks. Open heart surgery was carried out via median sternotomy and cardiopulmonary bypass. Through a right atrial approach, the guide wire and vegetation on TV anterior leaflet were removed followed by TV repair. The mitral valve was replaced by size 29 St Jude prosthesis. Coronary artery bypass grafting (CABG) was also performed (SVG@ to OM1□, SVG@ to RCA$ and LIMA© to LAD•). A piece of the guide wire, valve tissue and blood sample were sent for culture. All specimens grew Staphylococcus Epidermidis. Unfortunately, the patient succumbed on the 4th postoperative day.

Discussion

Central venous catheters have a great role in hemodynamic monitoring, administration of drugs, parenteral nutrition, hemodialysis and hemofiltration. Despite their obvious benefits, potential complications may develop in >15% of patients [2]. Perforations of the heart or central veins, infection, thrombosis, and pneumothorax are few to mention. Moreover, there are guide wire-related complications such as failure to pass, loss in the vessel, kinking, knotting and breakage of the guide wire [7]. Fortunately, such complications can be greatly reduced if the procedure is done by an experienced operator [5].

The most common guide wire-related complication is entrapment of guide wire [7].

Some authors have reported ventricular arrhythmias, complete heart block and sudden death [2-4]. Perforations of the heart or central veins can be attributed to inserting excessive length of the guide wire. Hence, it is important not to exceed a length of 18 cm which has been suggested by Andrew et al as the maximum safe limit in adults [3]. Worthy to note that a missed guide wire in the vascular system may not manifest immediately but days after the procedure; hence, a clinical awareness is necessary [3-5]. Interventional radiology techniques are the preferred method for retrieval of lost guide wires while surgery is necessary when there is no percutaneous facility or when it fails [2-4]

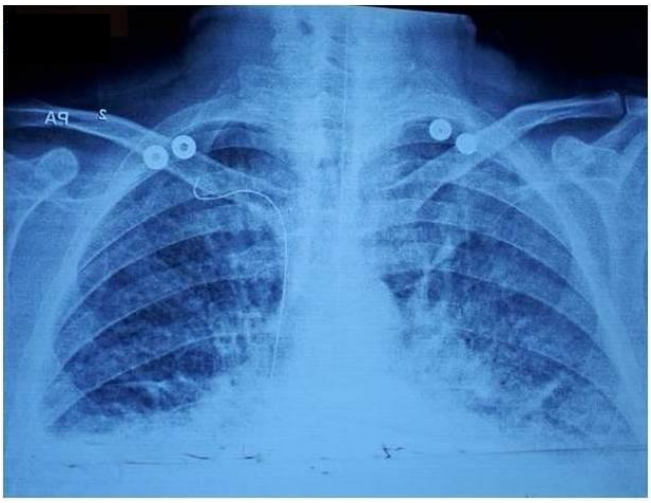

Figure 2: Chest radiograph showing a guide wire extending from right subclavian vein down to IVC

In the case presented herein, the retained guide wire could have been overlooked by the operator. Therefore, it is imperative to perform a chest radiograph after any CVL placement not only to ascertain the position of the CVL but also to look for potential complications such as pneumothorax or a missed guide wire. If the guide wire was discovered and promptly removed, IE would not have happened. Unfortunately, the patient subsequently stepped on a dirty nail and developed a wound infection which might have triggered a state of bacteremia. The triad of bacteremia, retained guide wire and a diseased heart ended in IE. Although the exact cause of death of our patient was unknown, a systemic embolization through PFO is a possible etiology.

Conclusion

While placement of CVL became a common practice, it must be placed for absolute indications. To minimize the complications, CVLs should be placed by an experienced or supervised operator preferably under ultrasonic guidance. Attention to some technical tips is crucial and a post-procedure chest radiograph is a must.

@Saphenous vein graft □First obtuse marginal artery $Right coronary artery ©Left internal mammary artery •Left anterior descending artery.

Consent: The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient.

Conflict of interest: none declared.

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