

# Psychiatric manifestations in a patient after surgical management of aortic stenosis of systemic lupus erythematosus

Andrzej Banyś<sup>1</sup>, Jakub Kaźmierski<sup>2</sup>, Ryszard Jaszewski<sup>3</sup>

<sup>1</sup>Department of Anaesthesiology and Intensive Cardiological Care, 1<sup>st</sup> Chair of Cardiology and Cardiac Surgery, Medical University of Lodz, Poland

<sup>2</sup>Department of Old Age Psychiatry and Psychotic Disorders, Medical University of Lodz, Poland

<sup>3</sup>Department of Cardiac Surgery, 1<sup>st</sup> Chair of Cardiology and Cardiac Surgery, Medical University of Lodz, Poland

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**Corresponding author:**

Andrzej Banyś MD, PhD  
Department  
of Anaesthesiology  
and Intensive Cardiological Care  
1<sup>st</sup> Chair of Cardiology  
and Cardiac Surgery  
Medical University of Lodz  
1/3 Sterlinga  
91-428 Lodz, Poland  
E-mail:  
andrzej.banys@umed.lodz.pl

## Abstract

Systemic lupus erythematosus is a chronic inflammatory autoimmune disease which damages tissue and organs. Circulation, kidney, lungs, liver, central and peripheral nervous systems, joints and skin may be damaged. It also often involves psychotic syndromes which might even be stimulated by glucocorticoid therapy. In the following article we present the case report of psychotic symptoms in a 26-year old patient after management of aortic stenosis in systemic lupus erythematosus receiving glucocorticoid therapy.

**Key words:** systemic lupus erythematosus, aortic stenosis surgery, psychotic symptoms.

## Introduction

Neuropsychiatric symptoms in systemic lupus erythematosus (SLE) are observed in 15-75% of patients [1, 2]. They might arise at any time during the disease course. The first attempts of classification of neuropsychiatric symptoms in SLE were undertaken by Kassan and Lockshin in 1979 [3]. In 1999 an interdisciplinary team of consultants appointed by the American College of Rheumatology (ACR) Committee on Research worked out a uniform, standardized classification of neurological and psychiatric syndromes observed in patients with SLE, after excluding other causes of these disorders [4]. The study remains an acknowledged, obligatory canon of recognizing neuropsychiatric symptoms appearing in SLE.

## Case report

A 26-year-old patient with SLE, during permanent immunosuppressive therapy, with hypertension under pharmacological control, lupus nephropathy treated since 1999, and a complex aortic valve disease in the form of bicuspid aortic valve stenosis with a gradient and incompetence IA I/II°, was admitted to the Cardiac Surgery Department in order to operate on the heart disease. On the day of admission (21.07.2009) the patient was in a good general condition, with no pain complaints, traits

of stasis over lung fields, oedema of lower extremities, or a temperature. Body mass: 102.5 kg, RR 130/80 mmHg, HR 100/m, sinus rhythm. In laboratory investigation: creatinine concentration (CREA) – 3.61 mg/dl, urea (UREA) – 98 mg/dl, glomerular filtration rate (GFR) – 45 ml/min. Electrolytes: Na (s) 141 mmol/L, K (s) 5.15 mmol/l, Cl (s) 112 mmol/l. Due to recurrent nephrotic syndrome, the patient continued immunosuppressive treatment (prednisone 10 mg/24 h). Moreover, due to higher concentrations of potassium for a week-long period, the nephrologist taking care of the patient prescribed mycophenolate mofetil (MMF) in 540 mg/bd. In preoperative echocardiographic examination a complex organic aortic valve disease in the form of bicuspid aortic valve stenosis (SA) with the gradient max. 70-71 mmHg, aortic incompetence (IA) I/II° and left heart ventricle hypertrophy (LV) was confirmed. Furthermore, a small secondary mitral incompetence (IM) I°, trace tricuspid valve incompetence (IT), poor gradient of aortic coarctation (Ao descending V max. 2.75 m/s, grad. max. 30 mmHg), as well as a lack of a segment contractility EF 59% were revealed (21.07.2009).

On 22.07.2009, on schedule, an operation of aortic valve exchange was performed in the conditions of extracorporeal circulation, with implantation of an artificial aortic valve – ATS 21 A. During the surgery, from disconnection of the extracorporeal circulation apparatus, and for the first 48 h after the operation, the patient called for catecholamine support (adrenaline, dopamine) in modified doses.

The patient was deintubated in the 6<sup>th</sup> h after the intervention. Self-, efficient respiration. According to nephrologists' recommendations, the steroid Solu-Medrol (Pfizer, Belgium) in 1 × 40 mg dosing was restored (it had been stopped for the time of the operation). The early post-operative period (10 h at the intensive care unit [ICU]) was complicated by transient AV block III°, with the necessity of temporary, 10-h stimulation with an external pacemaker. Control Holter examination did not indicate any sinus inhibitions or AV transmission disorders.

On the third day after the operation (50<sup>th</sup> h of ICU stay), the patient demonstrated acute psychotic symptoms. The patient had visual hallucinations and expressed persecutory delusions and mistaken identification of people (he claimed that medicines in the form of intravenous infusion were poisons killing him, and the medical staff were evil power assistants intending to annihilate him). The patient was conscious, properly auto- and allopsychically oriented, strongly psychomotorly agitated, actively aggressive in relation to himself, his family and medical staff.

Due to the patient's aggressive behaviour directly threatening his own and others' health and life (the patient removed from himself a venous catheter, operational wound dressing and electrodes monitoring heart work, and beat the nurse trying to intervene) he required intravenous pharmacological sedation (haloperidol 5 mg iv, diazepam 20 mg iv) and administration of temporary (a few hours) physical restraint. During the following 6 h, three-fold repetition of pharmacotherapy with haloperidol and benzodiazepine was necessary.

There were two episodes of similar symptoms in the patient's history. The last incident took place 2 years before and it followed an increase of steroid dose in the situation of nephritic syndrome recession.

On 25.07.2009 the patient was consulted by psychiatrists. The consulting psychiatrist diagnosed an acute psychotic disorder caused by a somatic disease. As the psychotic symptoms continued, although without strong motor agitation, the therapy with haloperidol *per os* was modified and continued for the subsequent 4 × 24 h. Four days later (29.07.2009) regression of productive symptoms was reported together with the normalization of a motor drive. On 30 July the patient was discharged from the ICU of the Department of Anaesthesiology and Intensive Cardiac Surgery Care in a good general condition.

## Discussion

Mental disorders such as delirium are frequent complications following cardiac surgery (16.3%) [5, 6]. However, the above-mentioned psychotic disorders appearing in the post-operative period are rarely described in the medical literature. Risk factors of these disturbances are also less known.

The case report presented here and single case reports indicate that the essential role in post-operative paranoid syndrome occurrence might be played by a specific somatic and neurological load. They are: hyperthyroidism and hypothyroidism, Cushing's syndrome, Addison's disease, multiple sclerosis, Huntington's disease and systemic diseases [7]. In the above-described patient with SLE, additional factors, possibly predisposing to occurrence of postoperative mental disorders, arose. They are: increased concentration of urea and creatinine, heart arrhythmia, accompanying steroid therapy and administration of MMF.

It was indicated that the above biochemical disorders and heart arrhythmia are independent risk factors of post-cardiac surgery delirium [8, 9]. Of interest, though, is whether these disorders could have contributed to the psychotic disturbances in our patient. Although steroid treatment can provoke psychotic symptoms, this factor, up till now, has not been reported as

independently predisposing to delirium or psychotic disorders after cardiac surgery. It was proved, though, that increased cortisol levels independently enhance delirium risk after operations other than cardiac surgery [10]. Moreover, MMF administered to the patient could contribute to delirium, especially when combined with another immunosuppressive agent (prednisone). However, the use of MMF was reported as more effective and safer than other immunosuppressants in SLE with neuropsychiatric complications [11]. The originality of the current case report consists in coincidence of three factors which contributed to delirium in a single patient: cardiac surgery, SLE and steroid therapy. To our knowledge, such a case report has not been presented in the available literature.

Occurrence of postoperative neuropsychiatric complications deteriorates the prognosis, lengthens the patient's stay at the ICU and the overall hospitalization time, and also increases the frequency of institutionalization after hospital discharge [12]. The presented data show that patients with Systemic lupus erythematosus constitute a risk group of postoperative mental disorders (psychotic ones, especially). SLE patients scheduled for intervention should then be monitored particularly in the perioperative period for delirium and psychotic disorders. Such tools as the Memorial Delirium Assessment Scale, or Delirium Index, standardized in cardiac surgery patient groups, can be applied [13].

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