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# The H1N1 Influenza Pneumonia as Early Complication after Heart Transplantation – Experience from the Dubrava University Hospital, Zagreb, Croatia

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## ABSTRACT

*In April 2009, a novel influenza A (H1N1) virus was initially detected, and only after two months World Health Organization declared pandemic, while virus became globally present. We report here a confirmed case of patient suffering from H1N1 influenza pneumonia in an early period after heart transplantation. Complications of influenza A and B include viral pneumonia, secondary bacterial pneumonia and possibly acute allograft rejection in the setting of weaning of immunosuppression. In our case H1N1 influenza pneumonia was treated according to the published guidelines and had a mild course of disease, but nevertheless emphasis should be put on the prevention of disease applying known general infection control procedures and vaccination while disease course cannot be predicted.*

**Key words:** H1N1, influenza, heart transplantation, pneumonia

## Introduction

In April 2009, a novel influenza A (H1N1) virus was initially detected, and only after two months World Health Organization declared pandemic, while virus became globally present<sup>1</sup>. New H1N1 influenza pandemic very soon started to impose a broad scope of new issues in transplantation medicine, especially concerning potential donor or recipient infection prevention and treatment in order to prevent acute allograft rejection<sup>2</sup>. Therefore, a new set of guidelines by American Society for Transplantation and International Society for Heart and Lung Transplantation were published in order to facilitate clinical judgment<sup>2</sup>. However, real-life clinical data and experience are lacking. We report here a confirmed case of patient suffering from H1N1 influenza pneumonia in an early period after heart transplantation.

## Case Presentation

A 57 year-old man with a history of severe coronary artery disease previously treated with coronary artery

by-pass graft surgery was admitted to cardiothoracic clinic in order to be treated with orthotopic heart transplantation (HTx). Transplantation procedure was complicated with brachiocephalic vein injury upon re-sternotomy, prompting its ligation, as well as aortic injury requiring interpositum graft (Uni-Graft K DV 15 cm / 16 mm) insertion between the native and the aorta of the allograft. In the early postoperative period patient was on vasoactive and inotropic support with dominant head and neck edema which complicated leaning from mechanical ventilation. Since no resolution of the edema was observed, a control multislice CT-scan with contrast was performed which revealed thrombosis of superior vena cava (SVC). Ten days post-HTx patient was operated again, with treatment which included partial thrombectomy and SVC to right atrium anastomosis with polytetrafluorethylene graft. Procedure was uneventful but later that day patient became febrile with temperature 38 °C, with suspected pneumonia. On repeated bronchial

aspirates *Enterobacter cloacae* (ESBL) was isolated and patient was treated with ciprofloxacin and meropenem. Second day he became afebrile and after three weeks was transferred to cardiology department for further conservative treatment. Routine myocardial biopsies were omitted due to aforementioned SVC thrombosis, and heart graft performance was assessed with heart echocardiography instead. He was treated with standard immunosuppressive therapy which included cyclosporine, mofetil mycophenolate, prednisone, with addition of acyclovir and myconazole for prevention of viral and fungal infections. After being three days on a cardiology department he again became febrile with temperature measuring 39°C with aches in bones and joints. Both hemocultures and urincultures were negative for bacteria, but nasotracheal swab confirmed H1N1 virus using standard RT-PCR method, together with chest X-ray which revealed bilateral interstitial pneumonia (Figure 1). A treatment with oseltamivir 75 mg bid was initiated and continued for ten days, resulting in complete resolution of clinical symptoms and X-rays findings. He was discharged home 60 days post HTx.



Fig. 1. Chest X-ray prior to oseltamivir therapy revealing bilateral interstitial pneumonia (in the lower right part of lung there is a higher position of diaphragm).

## Discussion

Complications of influenza A and B include viral pneumonia, secondary bacterial pneumonia and possibly acute allograft rejection in the setting of weaning of immunosuppression<sup>1,2</sup>. According to the previously published papers, recipients of solid organ transplantation are at higher risk for serious disease from seasonal influenza and one could also preclude that the same states for the emerging H1N1 virus, subtype of influenza A, especially if they are on steroid therapy<sup>2,3</sup>. Our patient had a mild course of disease accompanied with radiological signs of pneumonia which did not require intensive care treatment, while no respiratory distress was manifest. He had no signs of deterioration in allograft performance as assessed by periodical echo, probably due to an early treatment with oseltamivir which was extended to ten days. We anticipated that prolonged immune suppression together with specifics of the H1N1 virus are likely to prolong viral replication, as reported previously<sup>2,4</sup>. We presume that infection was acquired during a visit of a close family member since he also had signs of influenza but testing was not performed due to noncompliance. During an outbreak in our country we've put a major emphasis on controlling the further H1N1 influenza nosocomial spreading, including early recognition and testing of suspicious cases among inpatients and attending staff, rigorously controlled generally hygiene practice and close monitoring of compliance with infection control practice by designated infection control team. Furthermore, we agree with the recommendation that a preventive vaccination against H1N1 virus should be considered in all patients awaiting heart transplantation in order to reduce incidence of potentially hazardous complications, while there is no increase in acute rejection frequency<sup>4,5</sup>. The vaccination was not performed in our patient because of vaccination was not available on our country at the time of HTx. Furthermore, we would suggest routine H1N1 swabs for all transplant patients being pyretic, together with all contacts, and should be prescribed a prophylactic course of oseltamivir until results.

In conclusion, in our case H1N1 influenza pneumonia was treated according to the available guidelines and had a mild course of disease, but nevertheless emphasis should be put on the prevention of disease applying known general infection control procedures and vaccination while disease course cannot be predicted.

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## **H1N1 INFLUENZA PNEUMONIJA KAO RANA KOMPLIKACIJA NAKON TRANSPLANTACIJE SRCA – ISKUSTVO IZ KLINIČKE BOLNICE DUBRAVA**

### **S A Ž E T A K**

U travnju 2009. godine, novi virus influenze A (H1N1) inicijalno je detektiran, i nakon samo dva mjeseca Svjetska zdravstvena organizacija (WHO) proglasila je pandemiju, s obzirom da je virus postao globalno prisutan. Prikazujemo klinički slučaj bolesnika koji je liječen od H1N1 influenza pneumonije u ranom periodu nakon transplantacije srca. Komplikacije influenza A i B uključuju virusnu pneumoniju, sekundarnu bakterijsku pneumoniju i moguću akutnu reakciju odbacivanja alografta tijekom reduciranja imunosupresivne terapije. U našem slučaju H1N1 influenza pneumonija liječena je sukladno dostupnim smjernicama uz blagi tijek bolesti. Bez obzira na činjenicu blagog tijeka, naglasak bi svakako trebao biti na prevenciji nastanka bolesti uz primjenu poznate opće poznatih principa kontrole širenja bolesti i vakcinacije s obzirom na činjenicu da tijek bolesti ne može biti predviđen.