

## 4th Annual ELSO-SWAC Conference Proceedings

# Case study: Complicated influenza pneumonia

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This is a case presentation of a 16-year-old male patient who arrived in South Africa after a trip to Hong Kong. He had been on a sports tour. Previously, he had been healthy with no past medical history of note. Days prior to leaving Hong Kong, he had contracted a flu-like illness. On arrival at O.R. Tambo International Airport (in South Africa), he was showing signs and symptoms of deterioration in condition, including fever, coughing and confusion. He was tended to by paramedic staff at the airport, who transported him urgently to our emergency department (ED) by ambulance. He was extremely short of breath. At the time of arrival in the ED, he was not intubated. He had a quick sequential organ function assessment (qSOFA) score of 3, with a lactate level  $> 2$  mmol/l.

The patient's condition was found to be critical, with marked deterioration in his respiratory and haemodynamic status. Soon after arrival, he required resuscitation in the ED. With no return of spontaneous circulation (ROSC), despite aggressive resuscitation, it was decided to place him on veno-arterial extracorporeal membrane oxygenation (VA ECMO). He was cannulated femoral-femoral with a 23-French venous catheter and a 15-French arterial catheter. Extracorporeal cardiopulmonary resuscitation (ECPR)<sup>1</sup> was performed promptly with successful return of spontaneous circulation. Due to poor saturation and oxygenation on blood gas, veno-venous (VV) ECMO was concomitantly performed. An 18 French Avalon catheter was separately placed in the internal jugular vein. This required a second ECMO machine to be used, as his clinical condition was deemed to be too unstable to create a hybrid circuit (VA-V). The patient had good oxygen saturation levels with a satisfactory blood pressure, and hence, he was transferred to the Intensive Care Unit (ICU).

Appropriate clinical samples were sent (with a request for urgent influenza PCR test to be performed on a tracheal aspiration specimen), and a positive result

was found for influenza B. As it was unusual for influenza B to result in such a severe septic shock clinical picture, a bacterial co-infection was suspected. He was started on empiric therapy with broad spectrum antibiotics, including Linezolid, to cover for *Staphylococcus aureus* infection. Urgent blood Gram stain confirmed Gram-positive cocci, and soon thereafter, a blood culture positive for *Staphylococcus aureus* was confirmed. Despite comprehensive treatment, pharmaceutically and mechanically, the patient continued to deteriorate. All parameters did not improve. Discussions were held regarding the central cannulation<sup>2</sup> and it was decided to commence with the same immediately. The patient was transferred to the theatre for the placement of central ECMO. Despite successfully placing the cannula in the right atrium and aorta, the patient's condition did not improve, and flow<sup>3</sup> and haemodynamics were deemed insufficient to maintain

brain function. The patient had a cardiac arrest and was not further resuscitated in the theatre. Profound septic shock was in keeping with *Staphylococcus aureus* septicaemia and toxic shock syndrome.<sup>4</sup> This case was an example of combining full medical therapy with mechanical intervention, i.e. ECMO.

Note: Permission to report this case was obtained from the Hospital Administration on the basis that patient confidentiality was maintained. In addition, verbal consent was obtained from the patient's parents to present this case as a learning tool, also on the condition that anonymity is maintained.

Keywords: ECMO, central ECMO cannulation, influenza B, toxic shock syndrome, septic shock

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