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Legionella pneumonia with acute respiratory distress syndrome, myocarditis and septic shock successfully treated with Drotrecogin Alpha (activated)

EDITORS:

A previously healthy 43-yr-old Caucasian male patient was brought in the Emergency Department of our University Hospital with dyspnoea, fever and haemoptysis. The fever had been present for 5 days, but shivering appeared the day before this admission. Amoxicillin with Clavulanic acid 1 g twice daily had been prescribed by his physician. Two days after the initiation of the antibiotics, the symptoms worsened and the patient decided to report to our emergency department. He had no chest pain, no travel history nor had he been in situations necessitating long resting positions. He remembered that approximately 2 weeks before the onset of symptoms he had taken a shower with water from the reservoir of his house.

Physical examination revealed pyrexia (39.7°C), tachypnoea (36 breaths min^{-1}) and tachycardia (128 beats min^{-1}). He was using accessory respiratory muscles for breathing. Auscultation of the chest revealed bilateral rales. Cardiac sounds were barely audible. No other abnormality was found in the rest of the examination. Chest X-ray performed in the emergency department showed bilateral infiltrations of the lungs preserving the upper part of the right lung with air bronchograms in the basal regions and a slightly increased cardiothoracic ratio. White cell count was $10\,700\,\mu L^{-1}$ and only serum sodium ($130\,mEq\,L^{-1}$) and lactate dehydrogenase (LDH) ($537\,U\,L^{-1}$: maximum $480\,U\,L^{-1}$) was abnormal in blood chemistry. Blood gases measured pH 7.5, PaO_2 55 mmHg, $PaCO_2$ 20 mmHg and $15.2\,mmol\,L^{-1}$ HCO_3 breathing $5\,L\,min^{-1}$ oxygen.

Upon sedation and intubation, another arterial blood sample showed a PaO_2/F_iO_2 ratio of 85 and the patient was transferred to the medical intensive care unit (ICU) with the diagnosis of community acquired pneumonia Grade IV. Blood, urine and bronchoalveolar lavage samples were sent for culture as well as to determine serology for atypical pneumonia agents. Parenteral levofloxacine was initiated. On the second day, infiltration of the lungs was complete and the patient's oxygen saturation was hardly maintainable around 90% despite pressure-controlled ventilation, F_iO_2 at 100% and 18 cmH_2O of positive end expiratory pressure (PEEP). The peak

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airway pressure was as high as 44 cmH_2O in order to maintain the tidal volume at 6 $mL\,kg^{-1}$ body weight.

As qualitative test for urine antigen for *Legionella pneumophila* (all serogroups) was positive (Binax Now; Legionella Urinary Antigen Kit, Portland, ME, USA), Clarythromycin and Rifampin was added to the antibiotic regimen.

On the third ICU day, the patient presented supraventricular and ventricular dysrhythmias in the absence of ionic disturbances and hypoxia. Haemodynamic instability and oliguria appeared next. Fluid resuscitation did not suffice to improve the hypotension. Considering severe sepsis with three organ dysfunction, dopamine as well as Drotrecogin Alpha perfusion according to the patient's weight was initiated. Cardiac echography was performed and left ventricle ejection fraction was calculated around 55–60%. As expected, there was tricuspid regurgitation and the pulmonary hypertension was estimated around 45 mmHg. In the following 2 days, F_iO_2 was gradually reduced to 50%, the PEEP to 10 cmH_2O and dopamine perfusion was stopped.

Between 5th and 7th days the patient's sedation was stopped and he was ventilated in pressure support mode with 10–25 cmH_2O depending on his respiratory rate. He presented three acute left ventricle failure episodes which responded well to intravenous furosemide.

The patient was weaned from the ventilator on the seventh day and was discharged from the ICU on the following morning. Maximum dopamine infusion rate was 15 $\mu g\,kg^{-1}\,min^{-1}$. The patient received 173 mg of Drotrecogin Alpha (full dose for 75 kg of body weight) without any complication. Chest radiographs gradually improved and his fever subsided. Cultures from samples taken on the admission day in the ICU remained sterile with the exception of one blood culture over three in which *Staphylococcus epidermidis* was identified but was considered as contamination. The patient was discharged from the hospital on the 14th day and antibiotics were stopped on the 21st day.

Discussion

Reliable sources of information concerning the incidence of *Legionella* pneumonia in Turkey are hard to find. In many cases empirical antibiotic therapy is instituted before samples for culture are taken for diagnostic purposes. The lack of laboratory kits for assays or diagnosis prevents the identification of the causal agents in atypical pneumonia. In our hospital, we were able to confirm *Legionella* infection by demonstrating the presence of bacterial antigen in the patient's urine. When shock and organ dysfunction developed, we considered the use of Drotrecogin Alpha. Forty-eight hours after the initiation of the first half of the dose we noticed improvement in the patient's clinical condition. The patient then received the full dose of the drug without any complication.

Since its introduction on the marketplace, drotrecogin Alpha is more and more involved in the treatment of severe sepsis of multiple origins. According to our searches in Medline, excluding the PROWESS study [1], there was no reported case of its use in *Legionella* pneumonia complicated with myocarditis and septic shock. It seemed important to us to share our experience on this case. In fact, pulmonary legionellosis alone has a mortality of 8–35% depending on authors [2–4] and may be associated with other organ dysfunction like encephalitis [5], dysrhythmia [5] and visceral disorders [6] by direct action of the pathogen. The infection may also be the trigger of the systemic inflammatory response provoking sepsis-related organ failures [4]. Severe community acquired pneumonia account for 8–10% of medical ICU admissions and mortality varies from 22% to 54% [7,8]. Guidelines point out the importance of early and appropriate management of these patients. In our patient, recovery from organ dysfunctions was unexpectedly fast. With the exception of myocarditis, we associated these organ disorders to sepsis rather than to the microbial agent itself. According to the literature on *Legionella* pneumonia, our patient had some bad prognostic factors such as hyponatraemia ($<136\,mEq\,L^{-1}$), intubation, renal failure, duration of symptoms for more than 5 days [4]. It is also notified that average intubation period for this atypical pneumonia is 9 days. Despite the severity of the acute respiratory distress syndrome (ARDS), our patient was intubated for 7 days. We were tempted to attribute this early recovery to DAA but we do not have comparative data. Subgroup analysis of community acquired pneumonia from the PROWESS study's data identified eight cases of *Legionella* pneumonia (only one case of *L. pneumophilia*) but no additional information was given in this report concerning whether or how many of them received Drotrecogin Alpha and what was their fate [9].

In conclusion, severe community acquired pneumonia is a serious life-threatening condition. If complicated with septic shock and ARDS, it becomes difficult to treat. Drotrecogin Alpha is now widely available for the treatment of septic patients with organ failure. Its use in *Legionella* pneumonia complicated with myocarditis and sepsis as described in this report was successful.

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Spontaneous gastric perforation

EDITOR:

Spontaneous rupture of the stomach in an adult is a very rare event with mortality of about 85% [1]. Only about 60 cases have been described. Although in some cases an underlying gastric pathology (ulcer, pyloric stenosis, carcinoma, hiatus hernia) has been found in most, no histological findings of previous disease were discovered [1]. In the majority of those cases a high intragastric or intra-abdominal pressure caused gastric rupture [2,3]. Recently, dangerous gastric distention related to the use of the ProSeal™ laryngeal mask airway with spontaneous ventilation was described [4]. This report describes a patient who suffered from spontaneous gastric rupture during spontaneous breathing in the course of attempt to perform fibreoptic endotracheal intubation.

A 55-yr-old female (155 cm, 58 kg) was scheduled for parathyroidectomy due to adenoma. She had Cruson's disease (brachycephaly, exophthalmos, hypertelorism, divergent squint, beak like nose and prognathia) and Meniere's disease. She also suffered from choanal hypoplasia, deafness, hypertension and hypothyroidism. There had not had previous surgery. On the preoperative visit the general medical status was good with no abnormalities in laboratory tests, electrocardiogram or chest X-ray. Airway examination revealed a mobile jaw and neck, full dentition, a small mandible, a thyromental distance of less than two fingers, a huge tongue and a Mallampati score of 4. Elective awake fibreoptic intubation was planned. The patient received oral lorazepam 1 mg and famotidine 10 mg and intra-muscular hyoscine 0.25 mg as premedication. About 30 min before surgery she received an inhalation of salbutamol 5 mg in 5 mL of water and on arrival in the operating room, lidocaine was spread on the base of the tongue in a total dose of 80 mg. Intravenous midazolam 1 mg and propofol 30 mg were administered. The patient became sedated, breathing spontaneously with an oral airway. The chin lift manoeuvre for facilitation of breathing and fibreoptic intubation was commenced. A continuous oxygen flow of 4–5 L min^{-1} was given through the suction port of the bronchoscope. The first attempt failed as well as three additional

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