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Takotsubo cardiomyopathy: issues for the intensivist

Editor—We echo the caution advised by Dr Redmond and colleagues¹ in using sympathomimetics to address hypotension secondary to Takotsubo cardiomyopathy and propose mechanical circulatory support as an alternative in this condition. This suggestion stems from our treatment of a 67-year-old woman with subarachnoid haemorrhage and hypotension refractory to catecholamines, who was referred to the National Advanced Heart Failure Service at our hospital. She too had no evidence of coronary artery disease at angiography despite a moderate troponin increase. Left ventriculography demonstrated apical ballooning in systole and hyperkinesis of the basal segments consistent with Takotsubo cardiomyopathy. The left ventricular ejection fraction was estimated at 20% and an intra-aortic balloon pump was inserted. This enabled catecholamine infusions to be steadily weaned and discontinued within 36 h. Myocardial function recovered sufficiently to allow the removal of the balloon pump after 5 days. While acknowledging the paucity of evidence at this time, we feel that such use of mechanical circulatory support is a sensible approach in Takotsubo cardiomyopathy given the putative pathogenic role of catecholamines in this condition.²

We also wish to draw attention to the study by Park and colleagues³ assessing the incidence of Takotsubo cardiomyopathy in medical ICU patients. They performed serial echocardiography in 92 patients with a non-cardiac diagnosis and identified left ventricular apical ballooning in 26 (28%). Left ventricular function normalized in 20 of these 26 patients but still the presence of apical ballooning predicted lower 2-month survival. It is possible, therefore, that Takotsubo cardiomyopathy is neither uncommon nor unimportant amongst 'stressed' ICU patients. Moreover, as previously mentioned, standard treatment of hypotension may be counterproductive. Hence it would seem prudent to retain an index of suspicion and image the myocardium when hypotension proves relatively resistant to catecholamines. This provides further justification for the expansion of training in and use of echocardiography in ICU.⁴

Declaration of interest

None declared.

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Use of recombinant human deoxyribonuclease for the treatment of acute asthma

Editor—We would like to thank Dr Sellers for the recently published asthma review.¹ We would like to add to this comprehensive review by highlighting the potential use of recombinant human deoxyribonuclease (rhDNase) as an additional treatment for acute severe near-fatal asthma unresponsive to conventional therapy. It has been observed that patients who have died from severe asthma have marked widespread mucus plugging of the airways.² rhDNase is an enzyme that catalyses hydrolysis of extracellular deoxyribonucleic acid found in respiratory secretions, thereby reducing the viscosity of mucus plugs, improving expectoration, ciliary clearance, and overall airway obstruction.³ It is currently licensed for use in cystic fibrosis where it is administered by inhalation using a jet nebulizer. British guidelines on the management of asthma do not support the routine use of rhDNase or mucolytics for the treatment of severe acute asthma.⁴ There are however case reports, in paediatric and adult patients, suggesting its efficacy^{2 3 5} in mechanically ventilated patients with status asthmaticus unresponsive to conventional treatment. In each of these cases, there was an observed rapid improvement in oxygenation and reduced ventilatory pressures after rhDNase administration.^{2 3 5}

Administration by both direct instillation via bronchoscope and nebulizer therapy has been described and is well tolerated with minimal side-effects although blood streaking of sputum has been noted.^{2 3} Nebulizer therapy in non-intubated patients may have a role but requires further investigation. Two randomized studies^{6 7} including 171 patients showed no clinical improvement among moderate asthmatics refractory to standardized care; however, FEV1 measurements increased in the most severely affected.⁷

In summary, we would suggest rhDNase should be considered as a potential therapy for refractory treatment of intubated patients with status asthmaticus in the near-fatal setting.

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Use of magnesium in moderating tachycardia in acute severe asthma in pregnancy

Editor—We would like to support the observation that magnesium may be used to reduce the tachycardia associated with beta-1 adrenoreceptor agonism from i.v. boluses of salbutamol as reported in a section of your asthma review¹ by reporting a case of a 20 week gestation woman suffering life-threatening acute asthma.

A chronic asthmatic 22 yr primiparous female of 20 week gestation presented to hospital with breathlessness. Her asthma was controlled by inhaled salbutamol and beclomethasone. She had not been hospitalized before. Examination revealed scattered bilateral respiratory wheeze, and the oxygen saturation on 4 litre min⁻¹ flow of oxygen was 86%. After initial assessment, sequential nebulized 5 mg salbutamol was administered with i.v. steroids, but she failed to improve clinically. She was unable to complete sentences and complained of feeling tired. A decision was made to administer i.v. salbutamol, but this was limited to only a 60 µg (1 µg kg⁻¹) bolus by a sinus tachycardia of 160–170 bpm associated with chest pain and ST depression on a 12-lead ECG. The call for anaesthetic assistance had been for intubation and ventilation of the patient. However, 2 g of i.v. magnesium was administered over 10 min, with resolution of the chest pain, ST depression and the heart rate fell to 110–120 bpm. This allowed

completion of the administration of a full dose of 5 µg kg⁻¹ i.v. salbutamol and this was followed by a salbutamol infusion. There was a marked improvement in her breathlessness, and she was soon able to complete full sentences. Intubation and ventilation in an asthmatic, late second trimester parturient with all the attendant risks was avoided. The patient improved rapidly, and was discharged home after 2 days in a general medical ward. Her pregnancy continued uneventfully.

Magnesium sulphate has been used to treat the tachycardia and haemodynamic instability associated with phaeochromocytoma.² Previous publications^{3 4 5} have reported the use of magnesium sulphate to avoid the tachycardia associated with beta-2 adrenoreceptor agonism used to treat acute asthma. To our knowledge, this is the first time that magnesium has been reported for this use in a pregnant woman. Magnesium clearly has multiple desirable effects in this situation, such as tocolysis, and allowing the administration of i.v. beta-1 agonists with additional tocolytic properties of their own. This case supports the extension of the use of magnesium to the pregnant woman with severe or life-threatening acute severe asthma for the purpose of administering i.v. salbutamol.

Declaration of interest

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Allergic reaction to mepivacaine in a child

Editor—Allergic reactions to local anaesthetic agents are rare. Because of their low molecular weight, it is postulated that they are due to hapten-carrier protein complexes rather than the drugs themselves. Here we report a case of immediate mepivacaine hypersensitivity in a 14-yr-old boy, confirmed on drug provocation testing. A literature search reveals this to be the first reported paediatric case.