Declaration of interest

None declared.

W. A. Shippam*  
S. P. Tote  
Surrey, UK  
*E-mail: wshippm@doctors.org.uk

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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 review 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 pheochromocytoma. Previous publications 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 tocosylic, 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.

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D. Barker*  
H. Chin  
Milton Keynes, UK  
*E-mail: drdougbarker@gmail.com

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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.
The patient was referred to the paediatric anaesthetic/allergy clinic because of a reaction he experienced after dental filling under local anaesthesia. Within half an hour he developed generalized urticaria and facial angioedema. His symptoms responded to oral chlorphenamine. Possible allergic triggers included preservative-free mepivacaine 3%, Hypocal® non-setting calcium hydroxide, Unodent®, latex gloves, and chlorhexidine. He had not received any antibiotics or analgesics and was previously well with no atopic predisposition or co-morbidities.

Skin prick testing demonstrated a 5 mm wheal to preservative-free mepivacaine 0.3%, but was negative to latex, chlorhexidine 0.5%, bupivacaine 0.5%, and lidocaine 1%. The patient then underwent provocation testing with subcutaneous injections of 0.01, 0.1 and 0.5 ml of the undiluted solution of mepivacaine at 15 min intervals. Fifteen minutes after the last dose, the patient developed a wheal measuring 30 x 40 mm at the injection site (Fig. 1), followed by generalized urticaria, facial angioedema, cough and dyspnoea although there was no bronchospasm. His oxygen saturations remained at 100% in air.

The symptoms subsided with oral loratadine and inhaled salbutamol. A diagnosis of mepivacaine allergy was made. Lidocaine or bupivacaine was recommended as safe alternatives for future local anaesthetics.

Gall and colleagues¹ investigated 43 adults with suspected mepivacaine allergy over a 10 yr period using a schedule of prick, intradermal, and challenge testing and confirmed an allergy in only one of these patients. Bhole and colleagues² found that intradermal testing has a higher false-positive rate (37/2648—1.4%) compared with challenge tests (19/2560—0.74%) and thus the latter was recommended to confirm the diagnosis.

Most reactions to local anaesthetics in dental surgery result from autonomic activation, either vaso-vagals or the consequence of inadvertent intravascular co-administration of an alpha-adrenergic vasoconstrictor agent. Reactions to preservatives, for example methyl and propylparabens, have also been described.³—⁵ Immediate, IgE-mediated reactions are rare but important to exclude because the risk of anaphylaxis on re-exposure. Cross-sensitivity between amide local anaesthetics has been reported. As skin prick testing with local anaesthetic agents has a high negative predictive value of ≈97%,⁶ we were confident that a negative prick test with lidocaine and bupivacaine effectively excluded cross-reactivity and the patient could receive these drugs safely in the future.

In summary, many patients are incorrectly labelled with the diagnosis of local anaesthetic allergy. If a positive skin prick test reaction is found, a drug provocation test should be performed to confirm allergy. Diagnostic clarity and identification of safe, alternative drugs allow the individual to continue to receive the benefits of local anaesthetic agents.

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V. Sharma*
N. J. N. Harper
T. Garcez
P. D. Arkwright
Manchester, UK

*E-mail: vibha.sharma@nhs.net


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**Reducing system errors in the preoperative assessment process**

Editor—A thorough evaluation of patients before operation is vital. It reduces late surgical cancellations¹ but if inadequate may be associated with perioperative complications.² As patients become older and sicker, preoperative assessment is an increasingly complex activity requiring input from multiple hospital staff. With complexity comes the increased risk of error.

A system of checklists applied in a similarly complex environment, the operating theatre, can significantly affect patient outcomes. The implementation of the WHO safe-surgery checklist in eight hospitals around the world reduced mortality by nearly 50% and inpatient complications by 36%.³ A similar approach may be of benefit in the pre-operative assessment process.