

blockers, unfortunately, might have contributed to the severity of hypertensive attacks. The other recommended agent phentolamine, a short-acting alpha blocker, could not be used due to unavailability in our institution during this case.

Magnesium sulphate is routinely used to control arrhythmias and hypertension in patients undergoing cardiovascular surgery and in the Caesarean section of preeclamptic patients or ICU patients. However, magnesium sulphate is not the first drug of choice to control hypertension in other surgical procedures. First a vasodilatory drug treatment including nitroglycerine, nitroprusside, calcium-channel-blockers or beta blockers is started and subsequently other adjuvant drugs are added according to the features of the cardiovascular status of the hypertensive patients and even in some patients with phaeochromocytoma as reported by Fassam in reference 4 [2]. It appears that questions concerning the appropriate management of patients with phaeochromocytoma during surgery are increasing. In reference 4 cited by Fassam, all patients were given isoflurane. However, isoflurane was inadequate to attenuate their arterial hypertension. Hence it is not superior to propofol in this aspect and may even have a negative effect to prevent intracranial pressure increase in severe hypertensive crises. In our

case, single bolus following infusion of propofol dramatically decreased arterial pressure. The effect of propofol on blood pressure seems to be an additive effect to vasodilator treatment used previously. We agree about the comments on magnesium sulphate. If we consider the effects of propofol and magnesium sulphate on the cardiovascular system, a further choice might be the combination of propofol and magnesium sulphate to manage hypertensive crisis of patients having phaeochromocytoma, perhaps without alpha blocker treatment. A better attenuation of cardiovascular responses can be obtained because of their potentiation of each other.

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Recombinant factor VIIa in massive obstetric haemorrhage

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EDITOR:

A 38-yr-old ASA I, gravida 2 para 1, with a history of previous lower segment Caesarean section (LSCS) for breech presentation was scheduled for an elective LSCS in this pregnancy. The latest ultrasound, which was performed at 32 weeks, demonstrated an anterior grade III placenta praevia. The patient was very keen to proceed under spinal anaesthesia with full understanding of the likelihood of increased risk of bleeding and the need for transfusion of blood and conversion to general anaesthesia.

The baby was delivered in good condition via the placenta. The placenta was found to be strongly adherent to the uterine wall and was removed in a piecemeal fashion. Torrential bleeding ensued, requiring rapid administration of colloid, blood and

blood products via a rapid infuser along with pharmacological treatment to enhance uterine contraction and stop bleeding. During the course of resuscitation, general anaesthesia was induced with Ketamine and Suxamethonium and invasive monitoring was instituted with a view to proceeding to hysterectomy. The uterus was found to be adherent to the bladder and a subtotal hysterectomy was performed with repair of bladder. It was estimated that approximately 22 L of blood loss occurred. The patient required 29 units of packed red blood cells, 8 units of Fresh Frozen Plasma, 3 pools of platelets, 3 pools of cryoprecipitate, 2.5 L of crystalloid and 4.5 L of synthetic colloid (starch and gelatin) with no achievement of haemostasis. At this point, after discussion with the consultant haematologist, a bolus of 7.2 mg of rFVIIa was given intravenously despite the pH being 7.19 on arterial blood gas monitoring. The results were dramatic in terms of both successful haemostasis of the surgical field and ongoing fluid resuscitation requirements. Post operatively the patient was nursed in the intensive

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therapy unit (ITU) and required only one additional pool of platelets on ITU. She was electively ventilated overnight and was extubated the following morning. The patient made an uneventful recovery thereafter and was discharged from the hospital on the sixth postoperative day. Histology demonstrated placenta percreta.

Massive obstetric haemorrhage is a major cause of maternal mortality [1]. CEMACH (Confidential Enquiry in Maternal and Child Health) suggests risk of maternal mortality with low-lying placenta may be as high as 1:200. There is increasing experience of use of rFVIIa in cases of intractable haemorrhage from other causes. rFVIIa promotes clot formation by acting at a number of points in coagulation cascade [2]. The data sheet for rFVIIa suggests potential thrombotic complications (0.6%); however, data from rFVIIa extended use have lack of thrombotic complications in acute bleeding episodes. Use of rFVIIa in major obstetric haemorrhage is 'off label' in the UK [2] and hence it required approval from a consultant haematologist before use. The dose of rFVIIa ranges from 15 to 120 $\mu\text{g kg}^{-1}$. There is debate regarding the optimal timing of administration of rFVIIa. Loudon and Smith [3] suggest that according to their hypothetical model in terms of cost effectiveness, the

optimum time for administration of rFVIIa is after transfusion of 14 units of red cells as cost neutrality was maintained at this point even when two doses of rFVIIa were required. These findings need to be distributed widely as cost continues to be a contraindication for its use in some centres. Currently, there is lack of evidence-based guidelines on use of rFVIIa in major obstetric haemorrhage but this is an area that might merit further study.

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Are anaesthetists adequately trained to resuscitate patients?

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EDITOR:

Resuscitation is not performed on a regular basis by the vast majority of anaesthetists, especially those who no longer form part of a cardiac-arrest team. There is however a perception that anaesthesia is the lead specialty in this area [1]. There is no routine continued assessment of an anaesthetist's capability to perform cardiopulmonary resuscitation nor a specific requirement to maintain one's knowledge. We set out to survey both the level of training and knowledge of the universal algorithm (Resuscitation Council UK Guidelines, 1997) in one region of England to ascertain whether training within the region met recommended standards and whether knowledge was appropriate to clinical need.

In all, 150 anaesthetists were surveyed from five different hospitals during April 2005. Of them, 49 (33%) had received no formal basic life support (BLS) or advanced life support (ALS) training within the last 3 yr, either internal (provided by the hospital) or external (formal course). Of those who were surveyed, 61 (41%) had completed a Resuscitation Council UK ALS course within the past 3 yr. The proportion of anaesthetists completing this course was less in those in non-training posts compared to those in training posts (Fig. 1).

Of the untrained (no training in the last 3 yr) anaesthetists, 82% knew the first shock energy and 88% knew the dose of epinephrine. For trained anaesthetists this was 87% for first shock and 91% for dose of epinephrine. Knowledge of the algorithm was poor in both the trained and untrained anaesthetists. It has been demonstrated that retention of knowledge after resuscitation training is poor, when re-evaluated over a 6-month period [2]. This emphasizes the need for periodic reinforcement, especially for those who do

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