

CASE REPORT

Latex anaphylaxis during late pregnancy

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SUMMARY. A case of anaphylaxis to a latex urethral catheter in a 33-year-old at full term pregnancy is presented. The diagnosis is based on clinical findings and supported by subsequent immunological tests. She was managed with cardiopulmonary resuscitation, concomitant caesarean section and intravenous adrenaline. Despite the good maternal outcome the child showed early signs of severe perinatal asphyxia, the long-term sequelae of which remain to be seen. This report discusses this unusual cause of anaphylaxis and highlights the problems of resuscitation in the pregnant patient.

A 33-year-old multigravida was admitted to hospital at 33 weeks' gestation because of moderate pregnancy induced hypertension. She had a history of asthma which at that time was well controlled with inhaled salbutamol and beclomethasone. However, in the past she had experienced an episode of severe bronchospasm whilst shopping for fruit and vegetables. She had other features suggestive of atopy such as allergy to pet hairs and chronic eczema and volunteered an allergy to rubber, having developed buccal ulceration following a dental examination with rubber gloves, and experienced mild irritation after the use of condoms. She had an emergency caesarean section 6 years previously under general anaesthesia for antepartum haemorrhage resulting in severe fetal distress without untoward sequelae.

Over the ensuing 6 days her blood pressure failed to settle despite the introduction of labetalol 100 mg 3 times daily and ultimately bolus doses of hydralazine, so the decision was made to proceed to caesarean section. There had been no symptomatic deterioration in her asthma following the introduction of α and β blockade nor any suggestion of a reaction to any of the antihypertensive drugs the last of which had been given some 12 hours before the proposed surgery.

She was seen at 1100 hours on the day of delivery and arrangements were made to insert an epidural catheter at 1230 prior to caesarean section under epidural anaesthesia. However at 1200 the attending midwife inserted a latex Foley urethral catheter

following which, over a period of approximately 5 min she developed rapidly worsening dyspnoea and bronchospasm. Despite an inspired oxygen concentration of 60% and 250 mg of intravenous aminophylline she became deeply cyanosed and had a respiratory arrest during which she had no palpable cardiac output despite the presence of normal ECG activity.

Her trachea was intubated and she was ventilated with 100% oxygen and 5% halothane in an attempt to achieve adequate oxygenation and transferred to the operating theatre whilst maintaining external cardiac massage in the left lateral tilt position. Her initial profound hypotension (systolic pressure 40 mmHg) and bronchospasm responded rapidly to four boluses of intravenous adrenaline 100 μ g over 10 min and infusion of 2 litres of colloid (gelofusin). During the resuscitation period she developed marked facial oedema particularly in the periorbital and perioral regions which did not resolve for a further 24 h. She also developed a widespread erythematous rash.

At caesarean section a male infant with profound bradycardia and acidosis was delivered and transferred to the special care baby unit where he initially showed signs of severe asphyxia and generalised seizures requiring ventilation and anticonvulsants. However following discharge the child has proceeded through the first year's developmental milestones in a normal manner.

The patient was electively ventilated to moderate hypocapnia (PaCO_2 3.5–4.0 kPa) for 24 h postoperatively both for a degree of cerebral protection and because of fears concerning the possibility of

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laryngeal oedema. She was extubated at 24 h without further problem and made good progress to her discharge 10 days after delivery.

Analysis of serum taken 30 min and 24 h after the arrest showed a total serum IgE of 2160 ku/l (normal range 1.53 to 114) rising to 3190 ku/l although her serum complement and complement degradation products were difficult to interpret in view of the dilutional effects of the intravenous fluids used during her resuscitation.

Subsequent skin testing to a variety of latex medical products proved negative although latex specific IgE (RAST) test showed a grade 3 response considered positive. The clinical picture, temporal relationship to catheterisation and immunology make a strong case for latex as the aetiological factor in this case.

DISCUSSION

Cardiovascular collapse with cardiac arrest during late pregnancy is a rare event estimated to occur once in 30 000 pregnancies, and presents a major problem of resuscitation. The complication is usually fatal, although survival is more likely if the supine position is avoided and the fetus delivered without delay as aorto-caval occlusion by the gravid uterus prevents venous return and hence the effective use of external cardiac massage.^{1,2} Despite these measures, the outcome for mother and infant is often grave and may be complicated by permanent neurological sequelae. A hip wedge or other means to keep the patient tilted and help reduce aorto-caval compression^{3,4} must be used throughout the resuscitation, but, despite such measures, the circulation may not be restored until delivery of the child.² In this case not only was aorto-caval occlusion of concern, but also a full term uterus decreased thoracic compliance already severely compromised by bronchospasm.

The causes of major cardio-respiratory collapse in this group of young patients are few and include local anaesthetic toxicity, massive haemorrhage, amniotic fluid embolus and anaphylaxis. In the context of pregnancy, the possibility of pregnancy induced hypertension with either a convulsion or cerebral haemorrhage cannot be overlooked. The diagnosis of anaphylaxis is an important one to make since a successful outcome depends upon the rapid restoration of circulating volume and vascular tone and administration of adrenaline and oxygen.⁵ The diagnosis is essentially a clinical one, suggested by the temporal relationship to a trigger and various combinations of bronchospasm, hypotension, rash and oedema. Most frequently in the hospital situation the trigger is a drug or colloid solution. It could be argued that synthetic colloid solutions may not be ideal in this case although there is nothing to suggest

cross sensitivity between latex and gelatin. The trigger in this case would appear to be latex from the patient's history of previous sensitivity, the temporal relationship to the urethral catheterisation, the absence of other potential triggers and her positive RAST test to latex allergen.

Although allergy to rubber has been recognised for many years, it was initially considered to be solely a cell mediated delayed hypersensitivity reaction and not until 1979 was contact urticaria, a type 1 hypersensitivity reaction to natural latex (*Hevea brasiliensis*) described.⁶ Over the next few years latex became implicated in a variety of IgE mediated reactions such as urticaria,⁶ rhinitis,⁷ asthma,⁸ and anaphylaxis.⁹ The responsible hapten remains a matter for debate although terpenes, a group of compounds occurring naturally in many plants, may play a key role. Indeed one report suggests this as an explanation for the association between latex sensitivity and fruit sensitivity.¹⁰ There also appears to be an association with atopy, previous sensitivity reactions to latex and repeated exposure to the allergen. This latter point may explain the apparent association with spina bifida and the repeated surgical procedures these patients undergo.¹¹⁻¹³ True anaphylaxis remains very rare, however there is evidence that groups with regular occupational exposure such as operating theatre personnel have a higher incidence of latex allergy than controls, although this is more likely to be urticaria than anaphylaxis.¹⁴ This is in agreement with this patient who demonstrated increasing latex sensitivity with repeated exposure.

It has been demonstrated that a water soluble allergen can be extracted from latex¹⁰ and this may well explain the reports of anaphylaxis provoked by intraoperative contact with latex gloves, and the use of latex catheters during barium enema examinations.¹⁵ Anaphylaxis following the insertion of a latex urethral probe has also been described. Latex allergy accounted for 10% of patients being investigated for anaphylactic reactions to anaesthetic drugs in one series of 43 patients¹⁰ and is probably overlooked in the investigation of anaphylaxis in a large number of cases. The identity of the causative agent in most of these cases has been complicated by the concomitant use of other, often anaesthetic, drugs and has therefore relied on subsequent serological testing. This case not only has supporting serology but has a clear temporal relationship to an isolated trigger.

In conclusion, latex allergy should be considered when any potentially allergic reaction occurs during treatment. A history of atopy or previous contact allergy to rubber should be sought together with the more usual inquiry into drug allergies if this disastrous problem is to be avoided. The problem is compounded in pregnancy as the differential diag-

nosis is more complicated and adequate resuscitation of women in late pregnancy is very difficult and relies on lateral displacement of the uterus together with rapid caesarean section if initial cardiopulmonary resuscitation fails to generate an adequate cardiac output.

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