Rev Bras Anestesiol. 2016;66(4):433–436

Sociedade Brasileira de Anestesiologia

REVISTA BRASILEIRA DE ANESTESIOLOGIA

Publicação Oficial da Sociedade Brasileira de Anestesiologia
www.sba.com.br

CLINICAL INFORMATION

Allergic reaction to patent blue dye in breast surgery – case report☆

Marcius Vinícius M. Maranhão[a,*], Dyluzia Kelly Amaral da Nóbrega[b], Carlos Eduardo Caiado Anunciação[a], Barbara de Alcântara Brito Maia[a], Paulo Virgílio Dantas Mariano[a]

[a] *Universidade de Pernambuco (UPE), Recife, PE, Brazil*
[b] *Universidade Federal de Alagoas, Maceió, AL, Brazil*

Received 7 December 2013; accepted 12 February 2014
Available online 30 April 2016

KEYWORDS
Anesthesia;
Anaphylaxis;
Hypersensitivity;
Patent blue

Abstract We present a case of allergic reaction to patent blue in a patient who underwent excision of sentinel lymph node associated with segmental breast resection. About 20 min after the dye injection, the patient developed hypotension (BP = 70 × 30 mmHg) associated with increased heart frequency. The patient was treated successfully with decreased inspired fraction of inhaled anesthetic and fluid replacement. At the end of the procedure, she presented with bluish urticarial-like plaques on the head, neck, upper limbs, and trunk; hydrocortisone was then used. The patient recovered uneventfully and was discharged from the PACU 2 h after the end of surgery without skin changes, and was discharged from hospital on the morning after surgery. The incidence of allergic reactions with the use of patent blue is far superior to the hypersensitivity reactions seen with anesthetic and adjuvant drugs. Therefore, the anesthesiologist must be aware of cardiovascular instability associated with skin changes during the use of patent blue, for early diagnosis and appropriate treatment of this hypersensitivity reaction to this dye.

PALAVRAS-CHAVE
Anestesia;
Anafilaxia;
Hipersensibilidade;
Azul patente

Reação alérgica ao corante azul patente em cirurgia de mama – relato de caso

Resumo Os autores apresentam um caso de reação alérgica ao azul patente em uma paciente submetida à exérese de linfonodo em sentinela associada a uma ressecção segmentar de mama. Paciente apresentou aproximadamente pós 20 minutos da injeção do corante hipotensão (PA = 70 × 30 mmHg) associada a aumento da frequência cardíaca. Foi tratada satisfatoriamente

☆ Study performed at the Department of Anesthesiology, Hospital Universitário Oswaldo Cruz, Universidade de Pernambuco, Recife, PE, Brazil.

* Corresponding author.
E-mail: gabriel.n@uol.com.br (M.V.M. Maranhão).

http://dx.doi.org/10.1016/j.bjane.2014.02.018

com diminuição da fração inspirada do anestésico inalatório e reposição volêmica. No fim do procedimento apresentava placas urticariformes azuladas em cabeça, pescoço, membros superiores e tronco e foi usada hidrocortisona. Evoluiu, sem intercorrências, na sala de recuperação pós-anestésica e teve alta duas horas após o término do procedimento cirúrgico sem a presença das alterações cutâneas. Alta hospitalar na manhã seguinte à cirurgia. A incidência de reações alérgicas com o emprego do azul patente é muito superior às reações de hipersensibilidade observadas com drogas anestésicas e adjuvantes. Portanto, o anestesiologista deve ficar atento à instabilidade cardiovascular associada a alterações cutâneas quando do uso do azul patente para o diagnóstico precoce e tratamento adequado dessa reação de hipersensibilidade com o emprego do corante.

Introduction

Sentinel lymph node biopsy for early breast cancer surgical treatment has been widely used as part of routine protocol and, in most cases, it prevents total lymphadenectomy.[1,2] Patent blue dye or the radioisotope technetium may be used alone or in combination to identify the lymph node.[1] However, there are reports of hypersensitivity reactions mediated by IgE to blue dye, with an average incidence of 1.8% (0.1% to 2.8%); in some cases these reactions can be severe and yield serious hemodynamic effects requiring vasoactive drugs.[1–4] This frequency is higher than the hypersensitivity reactions seen during anesthesia, which is around 0.01% to 0.02%.[5]

Another effect seen with the use of patent blue are pulse oximetry changes because it interferes with the wavelength reading used to measure the oxyhemoglobin.[2] The objective of this paper is to present a case of intraoperative allergic reaction after subdermal periareolar injection of patent blue dye.

Case report

Female patient, 45 years old, 72 kg, ASA P2, referred from the Oncology Center (CEON) of the Oswaldo Cruz University Hospital, University of Pernambuco (UPE), Recife, scheduled for segmental resection of the left breast with sentinel lymph node resection. During preanesthetic evaluation, the patient reported history of hypertension and use of enalapril, without other comorbidities; she denied smoking and allergies to medicines, foods, and latex, and reported being a social drinker, using tranquilizers (bromazepam), and having undergone previous anesthesia without complications. Preoperative tests, such as cardiac examination, blood count, coagulation, biochemistry (urea, glucose, creatinine, AST, ALT), and urinalysis were normal. The patient was not premedicated. At the operating room, venoclysis was performed at the left upper limb with 20G Teflon catheter. Basic monitoring with cardioscope, pulse oximeter, and noninvasive blood pressure showed normal sinus rhythm, heart rate (HR) of 90 bpm, oxygen saturation (SpO_2) of 98%, and blood pressure of 130 × 70 mmHg. After preoxygenation with 100% O_2 via face mask and administration of cefazolin (2 g), induction of anesthesia was achieved with fentanyl (250 μg), propofol (150 mg) and rocuronium (50 mg). Tracheal intubation was performed with a 7.5 mm cuffed tube and basic monitoring complemented with capnography; controlled mechanical ventilation with 570 mL tidal volume and 12 ipm respiratory rate. At that point, cardiorespiratory parameters evidenced normal sinus rhythm, HR 85 bpm, SpO_2 100%, $ETCO_2$ 30, and PA 110 × 65 mmHg. Maintenance of anesthesia was achieved with sevoflurane (2–2.5%) and O_2/N_2O (50/50%). Immediately before the incision, a subdermal periareolar injection of 2.5% patent blue (2 mL) was performed. About 20 min after the blue dye injection, hypotension (70 × 30 mmHg) and increased HR (100 bpm) occurred without changes in heart rhythm, SpO_2, and capnography. Ringer's lactate (400 mL) was administered and end-tidal sevoflurane concentration decreased to 1.5%. About 10 min after volume replacement and a decrease in the fraction of inspired halogenated, blood pressure was 100 × 60 mmHg and HR 90 bpm, without changes in the remaining parameters. The anesthetic-surgical procedure went through without complications. Dipyrone (2 g) was used for postoperative analgesia. The duration of surgery was 50 min. At the end of the procedure, atropine (1 mg) and neostigmine (2 mg) were used for neuromuscular blockade reversal. After surgical field removal, the presence of numerous urticaria-like plates (bluish) was observed mainly in the face, neck, upper limbs, and thorax (Figs. 1 and 2). Hydrocortisone (500 mg) was administered. The patient quickly awakened from anesthesia and was extubated in the operating room. She was conscious, complained of mild pruritus, free of pain, and with cardiovascular and respiratory stability (blood pressure: 150 × 90 mmHg, HR: 95 bpm, and SpO_2: 98%). The patient presented with nausea, received ondansetron (8 mg), and was taken to the post-anesthesia care unit (PACU). After 60 min, the patient had no skin changes and was discharged from PACU 120 min after surgery. The patient was discharged from hospital the morning after surgery without complications.

Discussion

The most commonly used dyes for sentinel lymph node identification are isossulfan blue (commonly used in Europe)