



LETTER TO THE EDITOR—BRIEF COMMUNICATION

Severe anaphylactic shock to patent blue V with cardiac arrest during breast carcinoma surgery with lymphatic mapping

Dear Editor,

Patent blue V (PBV) and its isomer isosulfan blue are frequently used for lymphatic mapping and sentinel lymph node (SLN) biopsy in the staging of early breast carcinoma. Unfortunately, these dyes cause allergic reactions in 1–2% of cases. Although most of these are benign, severe anaphylactic reactions can occasionally occur [1].

A 54-year-old woman with breast carcinoma was scheduled for wide local excision and SLN biopsy. Except some weight excess and treated hypertension, she had no past medical history. After anaesthesia induction, 2 ml of PBV 2.5% (Guerbet[®], France) were injected subcutaneously near the tumor site. Three hours later, while the surgeons were closing, the patient suddenly collapsed with pulseless electrical activity. Advanced cardiopulmonary resuscitation rapidly revealed successful. Subsequently, the patient became hypotensive again and developed acute hypoxemia. Thoracic CT showed no pulmonary embolism but a diffuse pulmonary oedema. Echocardiography was normal except a mild global systolic dysfunction. After exclusion of any cardiac, haemorrhagic or septic cause, the shock was attributed to an anaphylactic origin. Histamine receptor blockers with high dose corticosteroid therapy were started. Plasma tryptase was measured 6 and 18 h after the event which revealed normal. Huge haemodynamic and respiratory instability requiring high dose vasopressor therapy, oxygenotherapy and mechanical ventilation persisted for 48 h. The patient developed a severe metabolic acidosis due to oliguric acute renal failure combined to lactic acidosis related to the shock. In addition, she developed acute disseminated intravascular coagulation with severe thrombocytopenia. Consecutively, she needed surgery again on postoperative day 4 to drain a breast haematoma. General anaesthesia was conducted without use of the anaesthetic drugs previously administered and was uneventful. After this very critical period, the patient's cardiovascular and respiratory functions progressively improved, allowing removal of tracheal tube at postoperative day 5. The following days were uneventful. The patient was discharged from ICU at postoperative day 8 and from hospital at postoperative day 19. Six weeks after the event, complete

allergic investigations with skin prick and intradermal tests to all potential allergens given during the operation were planned. Because of the risk to induce a potential life-threatening adverse reaction, PBV was not tested. All other intraoperative potential allergens (vecuronium, propofol, cefazolin, latex, sufentanil) were tested and revealed negative.

This report describes the case of a severe anaphylactic reaction to PBV with a very unusual clinical presentation. First, 3 h delay between dye injection and anaphylactic reaction is very long but such a latency has already been described and may be attributable to the subcutaneous administration of the antigen [2]. Secondly, the sudden cardiac arrest without any precursor and associated cutaneous or respiratory sign is also quite unusual. However, the rapid and extensive capillary leak syndrome developed by the patient and the exclusion of any cardiac, haemorrhagic or septic cause to the shock permits undoubtedly to conclude to an anaphylactic mechanism. Tryptase plasma concentration revealed normal but was measured late, since pulmonary embolism rather than anaphylactic shock was the first suspected clinical diagnosis. Although it was medically and ethically not possible 6 weeks after the event to specifically test patient's allergic sensitivity to PBV, we can nevertheless argue by exclusion that it was the causative agent of the fulminant anaphylactic reaction described.

Allergic reactions to PBV were first reported in the 1960s and 1970s when it was a classical agent used for lymphography. During the last 10 years, six cases of severe anaphylactic reactions to PBV after lymph node mapping were furthermore published [3]. Patent blue dye is a widely used agent in textile, paper, agriculture industries, cosmetic and medical products and this can explain prior sensitisation [4].

Given the actual progressive increase of the number of patients undergoing SLN biopsy, there is an evident need to find effective prophylactic measures to decrease the incidence of such adverse reactions. One option is to use a safer agent. Methylene blue seems to be an effective and valuable alternative to PBV for SLN biopsy [3]. Although it can also cause allergic reactions, these seem to be less frequent when compared to PBV or isosulfan blue. Nevertheless, methylene blue has not been much studied in that specific indication and further reports are needed to confirm its efficiency and safety profiles. A second option is to

administer a systematic preoperative anti-allergic prophylaxis. A preoperative regimen consisting of a glucocorticoid plus a histamine receptor blocker has already been shown to efficiently reduce the severity but not the overall incidence of adverse allergic reactions to isosulfan blue [5]. This should certainly be considered as a cost effective measure, at least in patients with past allergic history. A third and final option is to organize systematic allergic testing for all patients scheduled for SLN biopsy. This has already been suggested and should permit to efficiently detect patients at risk [4]. The exact benefit cost ratio of such a systematic testing still needs to be established.

References

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