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Chlorhexidine Wipes: Time to Stop and Think about Allergy

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ABSTRACT

Chlorhexidine is the third most common cause of perioperative anaphylaxis in Australia, New Zealand and the United Kingdom. [1,2] Chlorhexidine has been described as 'the hidden allergen [3] [4] and patients with known hypersensitivity are at high risk of repeat reactions and inadvertent re-exposure. This report presents three cases of perioperative anaphylaxis to 2% chlorhexidine 70% isopropyl alcohol wipes (CAWs) initially published in Anaesthesia and Intensive Care in 2019. [4] Practical strategies which clinicians can use to reduce the risk of chlorhexidine sensitisation and subsequent anaphylaxis are outlined.

The first case describes a 52-year-old male who presented for rhinoplasty and polypectomy. Preoperative assessment noted a history of chlorhexidine allergy. The intraoperative course was unremarkable including peripheral intravenous (IV) cannulation (PIVC) with a PAW. In the recovery unit he developed anaphylaxis after the injection port was wiped with a CAW prior to administration of IV analgesia. Management included adrenaline and IV fluids with postoperative monitoring in Intensive Care. The diagnosis of anaphylaxis was confirmed with acute serum tryptase elevation. Intradermal and prick testing for chlorhexidine were both positive. All other agents used during the perioperative course were skin test negative. Retrospective consideration of the case confirmed that the recovery nurse had noted the patient's history of chlorhexidine allergy during handover. The nurse had followed the usual routine to decontaminate the IV port prior to injection with an alcohol antiseptic wipe. With closer scrutiny the small print outlining contents confirmed the presence of chlorhexidine.

The second case was a 58-year-old male who presented for cardiac ablation to manage atrial flutter. His background revealed well-controlled asthma. The patient was initially stable following general anaesthetic induction utilising the insitu cannula. The anaesthetist then replaced the PIVC using a CAW. Initially mild hypotension was thought to be related to the existing arrhythmia. Cardioversion was unsuccessful and the hypotension worsened. He was treated with adrenaline, intravenous fluids and hydrocortisone. With restoration of circulation the patient appeared flushed and developed angioedema. Serum tryptases demonstrated acute elevation consistent with anaphylaxis. Intradermal and skin prick testing for chlorhexidine were both positive, with all other substances used testing negative.

Case three is another example of accidental re-exposure to chlorhexidine despite known hypersensitivity. A 49-year-old male presented for transurethral resection of bladder tumour. The general anaesthetic induction and intraoperative course were uneventful. The first reaction occurred five hours postoperatively when the injection port on the IV tubing was wiped with a CAW. He was treated with adrenaline, antihistamines and hydrocortisone. A diagnosis of chlorhexidine anaphylaxis was postulated, and chlorhexidine-free precautions instituted. The patient was educated and provided with an adrenaline autoinjector pen. Further urgent surgery was required five days later for a vesico-enteric fistula. Chlorhexidine-free precautions were adopted for the operating theatre with an uneventful operative course. On the second postoperative evening the patient was moved to a bed consistent with reduced observations. Signs regarding his chlorhexidine-free status and the PAW were not moved with him. A CAW was retrieved from a nurse's pocket to prepare the IV port prior to antibiotic infusion. Within minutes the patient developed symptoms of anaphylaxis. He self-administered his adrenaline autoinjector from his bedside drawer and called for help. He was treated with further adrenaline, intravenous fluids, antihistamines and hydrocortisone. Acute serum tryptase elevation was demonstrated. Chlorhexidine specific immunoglobulin E was strongly positive.

These three cases raise multiple issues regarding the optimal use of CAW in clinical practice with special considerations needed for patients with known chlorhexidine hypersensitivity. Chlorhexidine is an effective antiseptic in widespread use in hospital and community settings. [5] In many Australian hospitals CAW have superseded plain alcohol wipes (PAW) to become the default antiseptic wipe. However, the cases outlined confirm that CAW use has associated risk. CAW are a prime example of chlorhexidine as a "hidden allergen". It is because of this hidden nature that reports of recurrent reactions are common prior to the diagnosis of chlorhexidine as the cause. Healthcare workers may not be aware that the use of CAW for routine procedures, such as wiping IV ports prior to injection, can precipitate anaphylaxis. The presence of chlorhexidine in antiseptic wipes can be difficult to identify with variable appearance and small print. Furthermore, checking of contents of an antiseptic wipe is not routine practice prior to every use. In two of the reported cases, the patients were inadvertently re-exposed to CAW despite known chlorhexidine hypersensitivity. These cases emphasise the need to for staff education and constant vigilance to facilitate the safe management of patients with chlorhexidine anaphylaxis.

Clinical strategies to reduce repeat episodes of anaphylaxis begin with prevention. Every time a patient is exposed to an allergen could be the occasion they become sensitised, laying the groundwork for a future anaphylaxis. This immunological basis demands we consider the risks and benefits associated with the use of chlorhexidine on each occasion. There is no evidence of reduced infection rates of PIVC sites when using a CAW compared to a PAW for short term cannulation (< 24hours). [6] Decontamination of peripheral IV injection ports prior to use is a widespread practice which can be effectively performed with a PAW without the risk of direct IV introduction of chlorhexidine. [7,8] It is essential to work with hospital purchasing departments and insist on the availability of both PAW and CAW in the operating environment to ensure that the clinician can use the most appropriate option every time. Another clinical consideration when using a CAW is allowing sufficient time for the solution to dry before injection through the prepared area.

Patient education is extremely important when there is a history of anaphylaxis to chlorhexidine. They need to be aware of the widespread use of chlorhexidine in products in healthcare and community settings and taught to read labels carefully prior to use. We encourage these

patients to check all antiseptic wipe labels with staff prior to use wherever possible. Healthcare workers must be advised of their allergic history with an emphasis on provision of chlorhexidine free environment and alternatives for these patients.

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