

The danger of chlorhexidine in lignocaine gel: A case report of anaphylaxis during urinary catheterisation

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CASE STUDY

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ABSTRACT

This article describes a case of anaphylaxis secondary to chlorhexidine during urethral catheterisation. Despite little evidence for the use of antiseptic lubricants in preventing catheter-associated urinary tract infections, the distribution and use of such products continues to be widespread. Chlorhexidine-free lubricating gel is widely available and should be used for urological procedures wherever possible.

Key Words

Chlorhexidine, hypersensitivity, urethral catheterisation

Implications for Practice:

1. What is known about this subject?

Chlorhexidine is an antiseptic agent used in a variety of products and is known to cause potentially fatal hypersensitivity reactions.

2. What new information is offered in this case study?

This case highlights the potential for anaphylaxis to chlorhexidine and encourages the use of a chlorhexidine-free lubricant gel for urological procedures.

3. What are the implications for research, policy, or practice?

Given the availability of a safer alternative and the recommendations of international guidelines, hospitals and clinicians should use chlorhexidine-free lignocaine gel for urological procedures.

Background

Chlorhexidine gluconate is an antiseptic agent effective against a range of gram-positive and gram-negative organisms, as well as some viruses and fungi.¹ It is used in a wide range of hospital and community-based medical products. According to the Australian Register of Therapeutic Goods (a branch of the Therapeutic Goods Administration), chlorhexidine is found in 157 products. In addition, numerous commercially available and over-the-counter products may also contain chlorhexidine.²

Anaphylactic and anaphylactoid reactions to chlorhexidine are a rare but potentially life-threatening complication. Such reactions usually occur with either mucosal exposure (e.g., chlorhexidine-containing lubricating gel for urological procedures) or intravenous exposure (e.g., chlorhexidine impregnated intravenous catheters).

Case details

In November 2014, a 70-year-old male developed acute urinary retention while an inpatient receiving intravenous (IV) antibiotics following minor vascular surgery. His past history included type 2 diabetes mellitus requiring insulin, hypertension, peripheral vascular disease, and dyslipidaemia. Of note he had an open Millen's (simple) prostatectomy in August 2014 for gross prostatomegaly and acute-on-chronic urinary retention. There was no history of drug or food allergies, adverse reactions, atopy, or anaphylaxis.

Six days after an uncomplicated right second toe amputation, the patient complained of abdominal pain and was noted to be unable to void due to a tight sub-meatal urethral stricture. Multiple attempts to insert an in-dwelling

urethral catheter (IDC) were unsuccessful. Urology was consulted, and after serial urethral dilations using a hydrophilic urethral guide wire and S-curved urethral dilators, an IDC was successfully placed. Two chlorhexidine-containing products were used on the patient; the genitalia, groin, and perineal region was prepped with 0.1 per cent chlorhexidine irrigation solution and four 10ml tubes of lignocaine 2% gel with chlorhexidine 0.5% were used for urethral lubrication.

During this ward procedure the patient developed acute laryngospasm and bronchospasm. A Medical Emergency Team (MET) call was instituted and basic clinical observations found the patient to be hypotensive (blood pressure 75/50mmHg), tachycardic (heart rate 125 beats per minute), and hypoxic (SpO₂ 83 per cent, room air). Upon completion of the urethral dilation and subsequent IDC insertion the sterile drapes were removed and it was noted the patient had an urticarial rash in the groin and lower abdominal region, which subsequently extended to the upper abdomen and chest. Peri-orbital and peri-oral oedema subsequently developed.

The patient was administered IV fluids, IV hydrocortisone, intra-muscular (IM) adrenaline, followed by an IV adrenaline infusion, and an oral anti-histamine. He was subsequently transferred to ICU for observation; his symptoms resolved following initial management without the need for intubation or airway support. ECG and high sensitivity troponin did not demonstrate evidence of myocardial injury. Six hours following the reaction serum tryptase was found to be elevated at 18.3µg/L (normal range 0–11.4µg/L).

The patient was referred for allergy and immunology testing; skin prick testing for chlorhexidine was positive and specific chlorhexidine immunoglobulin E (IgE) antibodies were detected. He was issued a medical alert bracelet and advised to avoid preparations containing chlorhexidine in future.

Discussion

Since 1990, the TGA has received 23 reports of adverse events suspected to be directly attributable to the use of chlorhexidine-containing lignocaine gel.³ The majority of these involved local symptoms (e.g., urticarial or erythematous rash) and systemic symptoms (e.g., hypotension, hypoxia, bronchospasm, etc.). Although there have been no reports of death as a result of the product in Australia, fatal reactions have occurred elsewhere.⁴ Given the voluntary nature of reporting of adverse events in

Australia, reactions to chlorhexidine are likely to be under-reported. Furthermore, chlorhexidine may not be suspected as the causative agent due to its often-delayed symptom onset and the potential for anaphylaxis to occur after previous repeated uneventful administration.⁵

Multiple international guidelines recommend against the routine use of antiseptic lubricants during catheter insertion.^{6–8} The European Association of Urologists (EAU) states that “topical antiseptics or antibiotics applied to the catheter, urethra or meatus are not recommended”.⁸ Such guidelines are based on findings from several studies comparing antiseptic lubricants to non-antiseptic lubricants that found no significant differences in the rate of catheter associated urinary tract infections.⁷

In April 2009 the Australian Adverse Drugs Reactions Bulletin issued a warning highlighting the potential for anaphylaxis or other hypersensitivity reactions when using lignocaine 2% gel with chlorhexidine 0.05% for lubricant during urological procedures.⁹ In May 2009, the then President of the Urological Society of Australia and New Zealand (USANZ) wrote to members advising them of the release of chlorhexidine-free lignocaine 2% gel and recommending its use “wherever possible”.¹⁰ A similar message was included in the USANZ “E-news” newsletter in June 2009. However, according to the manufacturer, during the period from 2010 to 2014, the distribution of lignocaine 2% with chlorhexidine 0.05% in Australia declined by only 40 per cent (2015 Pfizer direct communication; unreferenced).

Conclusion

This case highlights the potential life-threatening risk of anaphylaxis to chlorhexidine contained in lignocaine gel commonly used for urethral lubrication. Given the availability of a safer alternative and the recommendations of guidelines advising against the use of antiseptic in lubricating gels, hospitals and clinicians should seek to use chlorhexidine-free lignocaine 2% gel for urological procedures.

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PEER REVIEW

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

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PATIENT CONSENT

The authors, *Stewart M and Lenaghan D*, declare that:

1. They have obtained written, informed consent for the publication of the details relating to the patient in this report.
2. All possible steps have been taken to safeguard the identity of the patient.
3. This submission is compliant with the requirements of local research ethics committees.