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NAP6 Survey results

Anaesthesia, Surgery, and
Life-Threatening Allergic Reactions

Background

In the past, there has been limited knowledge about the perspectives and experience of UK anaesthetists regarding anaphylaxis and the agents that trigger the allergic reaction. As a result, perioperative anaphylaxis was chosen as the subject for the 6th National Audit Project of the Royal College of Anaesthetists (NAP6) to deliver the largest ever prospective study of anaphylaxis related to anaesthesia and surgery.

What is anaphylaxis? Anaphylaxis is a life-threatening allergic reaction that happens suddenly, without warning and can affect anyone. Low blood pressure, impaired circulation and lack of oxygen in the lungs combine to starve the tissues of oxygen, leading to shock which in extreme cases rapidly progresses to cardiac arrest or even death.

The results

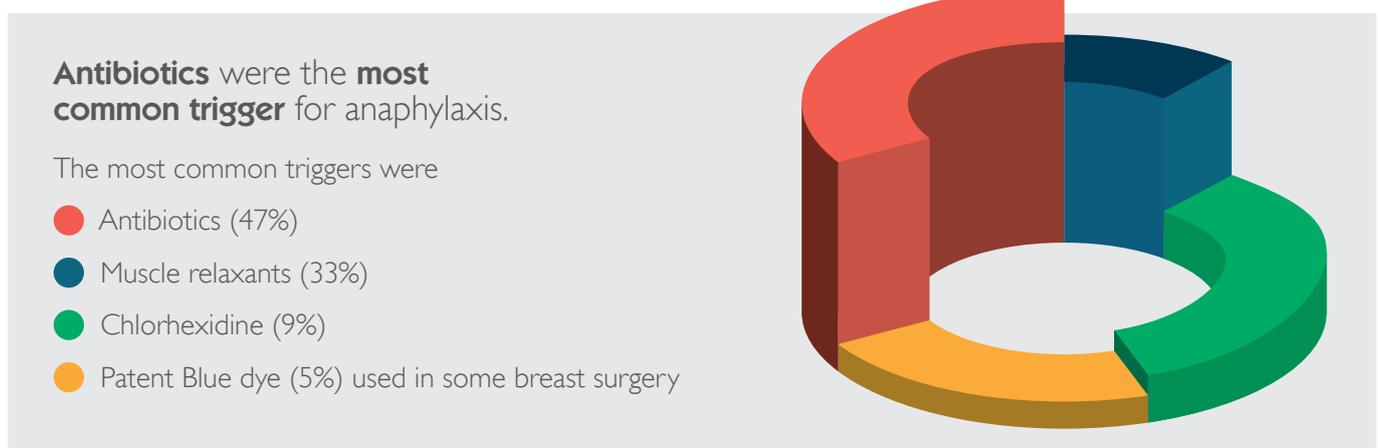
A key finding of the survey of more than 11,000 anaesthetists highlighted the differences in the perception, avoidance practices and suspected causative agents of perioperative anaphylaxis. There was a mismatch between the drugs implicated in events and the anaesthetists' perception of risk and avoidance practices.

Before the survey, the agents most frequently perceived to cause anaphylaxis were antibiotics, particularly penicillins, and neuromuscular blocking agents (NMBAs), notably rocuronium. Suxamethonium and penicillins were avoided by a higher proportion of respondents than events attributed to these drugs, while the converse was true for atracurium and teicoplanin.



Chlorhexidine unexpectedly makes the top 3!

The survey showed that chlorhexidine (CHG) was the third most common, and least suspected, cause of perioperative anaphylaxis causing nearly 10% of all reactions.



- That makes chlorhexidine twice as likely as latex to cause an allergic reaction
- In one recorded case, a chlorhexidine induced anaphylaxis proved fatal
- The diagnosis that chlorhexidine was the trigger for the anaphylaxis was often not recognised
- Anaesthetists suspected chlorhexidine to be the culprit in approximately a quarter of the cases where it was confirmed to be.

How are patients exposed to chlorhexidine in surgery?

Chlorhexidine exposure during the perioperative setting may occur via topical skin disinfection, chlorhexidine-coated central venous catheters, and the use of chlorhexidine-containing lubricating gels (Parkes 2009). It may not be immediately obvious that these products contain chlorhexidine – which has been called the ‘hidden allergen’¹.

Concern focusing on chlorhexidine and CVCs

A striking find from the research is that central venous catheters may be chlorhexidine-coated and the operator may not be aware of this. This is particularly important, as chlorhexidine-coated central lines can lead to rapid and severe reactions, which will progress if the catheter is not removed. Included in the report is reference to an example where a chlorhexidine-coated central venous line was not removed during anaphylaxis. This created a risk of continued exposure to the trigger and an increasingly severe reaction.

Furthermore, concern was also raised about the possibility of a central line being placed during the management of perioperative anaphylaxis, bringing the possibility of perpetuating or worsening the reaction. The NAP6 report advises that there are alternative antimicrobial coatings available for high-risk cases. It is also emphasised that a recent Cochrane review questioned the efficacy of chlorhexidine-coated venous catheters in preventing clinically important morbidity².

The key points to remember...

Growing exposure to chlorhexidine (CHG)

Patients are increasingly undergoing treatments in Hospital that expose them to a combination of CHG containing products, for example: skin preparation, lubricating gels and coated Central Venous Catheters (CVCs). Patients can become further sensitised each time they are exposed to one of these products.

CHG contribution to anaphylaxis is underestimated

CHG is the **third most common**, yet the **least suspected** cause of anaphylaxis and the link to CVCs also often goes unnoticed.

CHG reactions may still be underestimated even following the NAP6 audit

Following a reaction, not all patients were referred to an allergy clinic during the audit. Even if they attended, they may not have been specifically tested for CHG.

CHG is twice as likely to cause a reaction than latex

Latex is avoided and a latex free alternative is used in hospitals; why is this not the case for CHG?

PHMB protected lines are also available and putting patients at risk

PHMB contains the same sensitising functional group as CHG and should also be used with caution.



References

1. Ebo 2004: Ebo DG, Bridts CH, Stevens WJ. Anaphylaxis to an urethral lubricant: Chlorhexidine as the “hidden” allergen. Acta Clinica Belgica 2004; 59: 358–60.
2. Chong 2017: Chong HY, Lai NM, Apisarnthanarak A, Chaiyakunapruk N. Comparative Efficacy of Antimicrobial Central Venous Catheters in Reducing Catheter-Related Bloodstream Infections in Adults: Abridged Cochrane Systematic Review and Network Meta-Analysis. Clin Infect Dis. 2017; 64(suppl_2): S131–40.

<https://www.nationalauditprojects.org.uk/NAP6home>

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