

Rectal Stump Lavage: Simple Procedure Resulting in Life-threatening Complication

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In colorectal resections, rectal stump lavage is commonly performed prior to primary anastomosis for reducing bacterial counts and minimizing the risk of anastomotic recurrence. Being a potent bactericidal and cytotoxic disinfectant, chlorhexidine is frequently chosen as the irrigation solution of choice for such purposes. Despite its widespread use, the potential for developing chlorhexidine allergy is still a major concern due to the ever-rising number of literature reports of hypersensitivity reactions to chlorhexidine in surgical patients. This report illustrates the first reported case of life-threatening chlorhexidine anaphylaxis after its use in rectal stump lavage for colorectal resection. This report serves as a reminder of the potential danger of this “hidden allergen” in clinical practice. [*Asian J Surg* 2007;30(1):72–4]

Key Words: allergy, anaphylaxis, chlorhexidine, rectal lavage, rectal washout

Introduction

Chlorhexidine is a bis-biguanide molecule that is extensively used in medical field as a disinfectant. Since its introduction in 1954, it is ubiquitously used in countless surgical or interventional procedures. In colorectal surgery, it has been traditionally adopted as an irrigation solution of choice for rectal stump washout during colorectal resection for carcinomas. Although its applications are widespread, there are increasing reports in the literature regarding its hidden potential for hypersensitivity reactions.^{1–3} Chlorhexidine allergy can manifest as either immediate or delayed hypersensitivity reactions.⁴ The commoner delayed hypersensitivity usually results in milder reactions including contact dermatitis or fixed drug eruptions. However, immediate hypersensitivity can result in life-threatening anaphylaxis. The following report illustrates the first reported case of chlorhexidine anaphylaxis after use in rectal stump washout for colorectal resection.

Case report

A 43-year-old man, who had no known history of allergy or atopy, was scheduled for low anterior resection and total mesorectal excision for rectal cancer. The lower border of the tumour was located 8 cm away from the anal verge. In the operating theatre, anaesthesia was induced with fentanyl, propofol and rocuronium uneventfully. Cefuroxime and metronidazole were simultaneously given intravenously at the time of induction as antibiotic prophylaxis. After preparation of the operative site with povidone-iodine solution, the operation was carried out smoothly for the next 90 minutes. Because of the obstructing effect of the tumour, the colon proximal to the tumour was grossly dilated and loaded with faeces, necessitating on-table colonic lavage for primary anastomosis. Upon completion of total mesorectal excision, a right angle clamp was applied below the tumour and the rectum was irrigated with 80–100 mL 0.05% chlorhexidine acetate

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solution in 20 mL aliquots. The rectum was then transected with a linear stapler (Proximate TLH 30; Ethicon Endo-Surgery Inc., Cincinnati, OH, USA) at the level of pelvic floor. At that juncture, the patient suddenly developed sinus tachycardia of 130/minute, the oxygen saturation dropped to 80% and he developed marked hypotension of 70/40 mmHg. His hypotension initially remained refractory to immediate resuscitation with 2 L gelofusine. It improved only slightly after a bolus of intravenous adrenaline (1 mg) injection. Adrenaline infusion was required to maintain his blood pressure. Ten minutes since the development of tachycardia, the patient developed an erythematous maculopapular skin rash over the face, neck, chest and both upper limbs. Bronchospasm was absent. In view of his haemodynamic instability, on-table colonic lavage and restorative primary anastomosis were abandoned. The operation was completed rapidly with the formation of an end colostomy. Mast cell tryptase analysis found that, 60 minutes after the onset of reaction, it was markedly elevated to 63.6 µg/L (normal, < 13.5 µg/L), confirming the diagnosis of anaphylactic shock. The haemodynamic status of the patient remained stable after the operation and he was extubated 2 hours later.

One month after the operation, the patient underwent a skin allergy test. All the tested agents, including fentanyl, propofol, rocuronium and gelofusine, were negative on intradermal tests except for 0.05% chlorhexidine acetate, which showed positive skin wheal and flare after intradermal injection. An allergy card and a letter warning against chlorhexidine were issued to the patient.

Discussion

Rectal stump washout is believed to reduce bacterial counts⁵ and to minimize risk of anastomotic recurrence^{6,7} in patients undergoing surgery for colorectal cancer. Traditionally, there are several options of irrigation solutions to serve these purposes: water, saline or antiseptic solutions.

Antiseptic solutions have historically been proven to be superior to saline or water in reducing bacterial counts in the rectal stump.⁵ Results from nonrandomized trials have shown that antiseptic solutions, particularly chlorhexidine and povidone-iodine, are more effective than pure water because of its cytotoxic action against the exfoliated malignant cells in the rectal stump.⁸ Chlorhexidine and povidone-iodine are, therefore, commonly the agents

of choice for rectal stump washout in clinical practice. Despite the lack of randomized trials comparing the efficacy of antiseptic solutions against saline, recent evidence suggests that large volume saline lavage is able to eradicate the exfoliated malignant cells in the rectal stump.^{6,9}

In our unit, chlorhexidine is routinely used for rectal stump washout, which unfortunately resulted in severe anaphylactic reaction in this patient. Although immediate hypersensitivity to chlorhexidine is a rare event, such manifestations occurring in surgical or interventional procedures are well documented in the literature worldwide. When chlorhexidine was applied on the mucosal surface, the chance of developing anaphylactic reaction was remarkably higher than skin application¹⁰ and could occur at concentrations as low as 0.05% with low volume.^{3,11} Severe anaphylactic reaction has been reported in patients exposed to a small volume of lignocaine gel impregnated with 0.05% chlorhexidine during foley catheterization.³ Therefore, the Japanese Ministry of Health does not recommend the application of chlorhexidine solution to mucous membranes since 1984.¹¹ For our patient, the amount of chlorhexidine solution retained in the stump at the time of lavage was small. However, immediate anaphylaxis was possible because of direct mucosal contact. The impact of chlorhexidine allergy not only resulted in life-threatening anaphylaxis, but it also prevented the patient from undergoing restorative primary anastomosis due to haemodynamic instability. The resultant colostomy may lead to a number of physical and psychological complications.

As highlighted by published case reports,³ trivial skin reaction in the past could possibly lead to anaphylaxis during subsequent mucosal exposure. However, our patient could not recall any allergic skin reaction to antiseptics. For patients with a possible history of allergy to antiseptics, we recommend against its use for rectal stump washout. An adequate volume of saline or water (1.5 L for tumour situated below peritoneal reflection) could alternatively serve as a better option on the basis of mechanical lavage for rectal stump washout.⁹

Although rectal stump lavage with antiseptics is not an evidence-based practice, many surgeons still habitually use chlorhexidine-containing solutions. The anaphylactic reaction of our patient should remind all clinicians of the potential danger of this "hidden allergen".

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