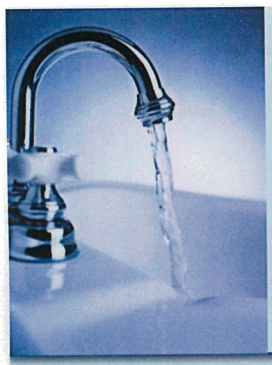

WOUND IRRIGATION

Is cleaning wounds with tap water as effective as sterile normal saline solution in preventing wound infection?

- BY ANNA BOYD

Introduction

Irrigation is a critical component of wound management. During clinical placement at the Urgent Doctors, patients regularly presented with wounds that needed cleaning, suturing, and dressing. The usual practice of the Registered Nurse was to irrigate the wound with sterile normal saline solution. However in some situations, the RN would choose for the wound to be irrigated tap water. This caused me to question which method is best practice. The purpose of my review was to establish what current research suggests about whether irrigating wounds with tap water is effective in preventing wound infections, thus insuring evidence-based patient care.

Research question: "In patients with uncomplicated lacerations, is irrigating wounds with tap water as effective as sterile saline solution in preventing wound infection?"

Potential Advantages

- In New Zealand, tap water of drinking quality is more readily available and cost effective, compared with saline solution.
- Using tap water would mean resources could be saved, thus sustaining our environment.
- The higher pressure of tap water irrigation compared with that of saline solution irrigation may improve the efficiency of bacterial removal (Crain et al, 2003).

Potential Risks

- Tap water is not a sterile solution, causing concern about potential risk for infection.
  - However, it has been proven that wounds become infected when they contain more than 105 bacteria per gram of tissue. Drinking-quality tap water contains an insufficient number of bacteria to cause wound infection (Janicke et al, 2007).
- With tap water being a hypotonic solution, there is theoretical risk of cell lysis, compared with saline solution, which is isotonic and is thought to not interfere with the healing process (Ljubic, 2013, Janicke et al, 2007).

Results

- The literature shows evidence that the infection rates for wounds cleaned with tap water and wounds cleaned with saline solution are equivocal
- When tap water showed a higher or lower infection rate than saline solution it was always by a minor percentage, and was considered clinically and statistically insignificant.
- The exclusion criteria used in the studies, limits the generalizability of the findings. The exclusion criteria included complicated wounds, immunocompromised patients, and patients currently taking antibiotics, meaning the findings cannot be considered applicable to patients who fit any of these categories (Albramo et al, 2002, Foster et al, 2012).

Conclusions

- The literature provides evidence that, for patients with uncomplicated lacerations, irrigating wounds with tap water is as effective as sterile saline solution in preventing wound infection.
- Foster et al (2012) concluded that tap water is a safe and cost-effective alternative to sterile saline.
- According to Ljubic (2013), the quality of the tap water, the nature of the wound, and whether or not the patient is immunocompromised, are factors that need to be taken in to consideration when deciding whether the use of tap water is appropriate.
- Magson- Roberts (2006) believes larger trials and further validation of the safety and efficacy of the use of tap water are required before widespread recommendation of use should be made.

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