BSP 2024 Abstract Summary

Abstract title:
The protective effect of soap against the attachment or penetration of schistosome cercariae to mouse tails

Abstract (max 4000 characters):

Introduction

Schistosomiasis is a neglected tropical disease which is spread through skin contact with water containing *Schistosoma* cercariae. Drug treatment with praziquantel has been the major control method, but it cannot prevent reinfection. Water, sanitation and hygiene interventions can be a sustainable measure to reduce transmission and are recommended as one of the core strategic interventions for schistosomiasis control by the World Health Organization. The use of soap is central to many hygiene practices; however, there is limited knowledge about whether and how the use of soap can protect individuals against schistosomiasis infection. Our previous systematic review demonstrated that soap on skin can act as a barrier to prevent cercariae from penetrating skin. In this experimental study, mouse tails were used to better understand the potential protective mechanism of soap against schistosome cercariae.

Methods

Laboratory experiments were carried out to study the efficacy of soap at preventing the attachment or penetration of *Schistosoma mansoni* cercariae into mouse tails. Mouse tails were stored at -20°C and thawed prior to use. For non-soap samples, ~2 cm of mouse tail tips were exposed to water with *S. mansoni* cercariae for 15, 30 and 60 minutes, and then removed. Tails were washed with water to remove cercariae that did not attach irreversibly to nor penetrated the tails. The experiment could not distinguish between attachment and penetration. The attachment or penetration of cercariae was determined by quantifying the number of cercariae in the liquid before and after exposure. For soap-treated samples, the same procedure was adopted to determine cercarial attachment or penetration at 60 minutes, but tails were treated with soap before being exposed to cercariae. One powder soap Kleesoft and one bar soap B29 which are commonly used in a schistosomiasis-endemic region of Tanzania were tested. 2 cm of mouse tail tips were treated with water mixed with powder soap Kleesoft at 10, 100 and 1000 mg/L or with B29 at 1000 mg/L by immersing the tail tips in the soap solution, and then rinsed in water to wash soap off the tails.

Results

S. mansoni cercariae were able to attach to or penetrate thawed mouse tails that had been previously frozen. The percentage of attachment or penetration to mouse tails was significantly related to exposure time, achieving a maximum of 54.5±11.0% at 60 minutes. Powder soap Kleesoft provided partial protection against the attachment or penetration of *S. mansoni* cercariae to mouse tails, and this protection was significantly associated with the soap concentration of tail treatment, reaching 87%

of reduction under 1000 mg/L tail treatment. However, bar soap B29 was not able to provide protection even under the highest concentration of 1000 mg/L tail treatment.

Conclusions

While neither soap type provided complete protection against attachment or penetration, powder soap was found to be more protective than bar soap, which may be especially important for long duration water contact activities such as washing clothes by hand.

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Disclosure

No significant relationships