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Abstract Title

Sex and hygiene behaviours associated with vaginal inflammation

Authors

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Background

A healthy female genital tract has a mucosal epithelial barrier composed of tightly bound epithelial cells which provides physical and antimicrobial protection. This mucosal layer is also home to diverse immune cells that communicate to maintain the integrity of the epithelial barrier.

Objective

To determine if sexual and vaginal hygiene behaviours are associated with vaginal inflammation through alterations in epithelial barrier homeostasis, pro-inflammatory protein expression, and immune cell populations.

Methods

Participants of the THRIVE cohort provided vaginal samples, cervical samples and completed an extensive questionnaire with information on sexual and hygiene behaviours. Using mass spectrometry, we assessed vaginal swabs for differences in protein abundance with functions in inflammation and epithelial barrier homeostasis. Using flow cytometry on cytobrushes, we investigated cervical immune cell populations.

Results

Out of the 31 vaginal hygiene behaviours we investigated, only external baby powder use ($p_{adj} < 0.05$) significantly altered vaginal protein expression, while no vaginal hygiene behaviour altered immune cell populations. 6 out of 8 powered sexual behaviours significantly ($p_{adj} < 0.05$) changed protein expression, while 3 significantly ($p_{adj} < 0.05$) altered T-cell populations. The sexual behaviours altering protein expression, were mostly vaginal penetration behaviours involving a foreign object or foreign body part. Sexual behaviours that altered T-cell populations were penetration behaviours involving skin contact. More recent and frequent foreign object or foreign body part penetration altered epithelial cell homeostasis proteins while more recent and frequent skin contact decreased T-cell populations involved in epithelial cell homeostasis.

Conclusion

Most vaginal hygiene practices did not alter protein expression or cervical T-cell populations suggesting that these practices should not generally affect reproductive health. However, the insertion of foreign objects tends to promote an environment that induces tissue repair and deplete the environment of certain immune cells. This may play a role in certain reproductive issues including sexually transmitted diseases.