

WHY DOES URINE FROTH?

Hypothesis / aims of study

To establish what causes urine to froth. Recently, two patients presented with a complaint of froth in urine and were thoroughly investigated. The urologist was unable to give a straight answer to the patient and hence did a Medline search. To his surprise he was unable to find any evidence base scientific literature. Hence a formal systematic review was conducted.

Study design, materials and methods

A full literature search was conducted using PubMed, Medline and Google Scholar. The search terms included urine, froth, frothy and foam.

Results

The patients were thoroughly investigated urologically, none of the two revealed any abnormalities on flexible cystoscopy, ultrasound scan of KUB, MSU and urine cytology and no obvious cause for frothing was identified. One patient had proteinuria and was referred for nephrological evaluation

Published literature was reviewed. Many articles mention that urine is foamy due to certain diseases mainly involving proteinuria. No article states why and how the proteins make the urine to froth.

Protein in urine produces a foamy appearance and therefore it is thought that proteinuria can cause the urine to froth. Another possible cause of frothy urine in men could be the presence of semen remaining in the urethra, although usually the quantity of remaining semen would be too little. However, in retrograde ejaculation in which semen enters the bladder could cause urine to froth. Vaginal discharge in women is unlikely to cause frothy urine. In addition to protein and semen, many other substances can be present in urine including: blood, pus, bacteria, glucose, casts, crystals, bilirubin, urobilinogen, urates, phosphates, melanin, fat globules, ketones, leukocyte, alkaline esterase, cancer cells, bladder tumour antigens, immunoglobulins, nitrites and schistoma ova. Some of these may have a role in contributing to the frothing of urine. The presence of some substances may reduce surface tension or act as surfactants and may contribute to the frothing of urine. Drugs taken could also cause foamy urine for example, pyridium. The biomechanics of the maturation process itself could contribute to the frothing, for example turbulent flow when straining.

Interpretation of results

No scientific research of what causes urine to froth has yet been published. The only articles found on the frothing of urine were not based on any scientific research.

Concluding message

Many possible causes of the frothing of urine may exist but no research has yet been published stating why urine can froth. We suggest more research into this topic.

References

1. G.Stillingfleet Johnson (1881) The Frothing of Urine. The British Medical Journal Vol 2, No 1096 (1881): 1054. Stable URL: <http://www.jstor.org/stable/25258569>
2. Robert Kirk (1881) On The Frothing Of Urine. The British Medical Journal Vol 2, No. 1094 (1881) : 978. Stable URL: <http://www.jstor.org/stable/25258458>
3. Arthur Hill Hassall (1881) Frothing Urine. The British Medical Journal Vol 1, No 1063 (1881): 767. Stable URL: <http://www.jstor.org/stable/25256921>

Specify source of funding or grant

None

Is this a clinical trial?

No

What were the subjects in the study?

NONE
