

SURPRISING SYMPTOMS INDICATING URINARY TRACT INFECTION

Hypothesis / aims of study

The tedium of the endless, repetitive, pedantic, collection of the same symptoms, at every patient consultation, for more than a decade may occasionally unearth a nugget of gold.

The aim of this study was to assess the symptoms of hesitancy, reduced stream, intermittent stream, straining to void, terminal dribbling and postmicturition dribbling as indicators of urinary tract infection (UTI) in patients with painless lower urinary tract symptoms (LUTS), without residual voiding.

The study evolved from a chance observation caused by the repetitive of symptom analysis. It was noted that patients without pain, but exhibiting evidence of UTI from urinalysis, described some or all of voiding symptoms, listed above, at presentation. Intriguingly, they experienced their resolution after treatment with antibiotics. A number described some of these voiding problems as their very first symptoms of a recurrence of urinary infection.

Study design, materials and methods

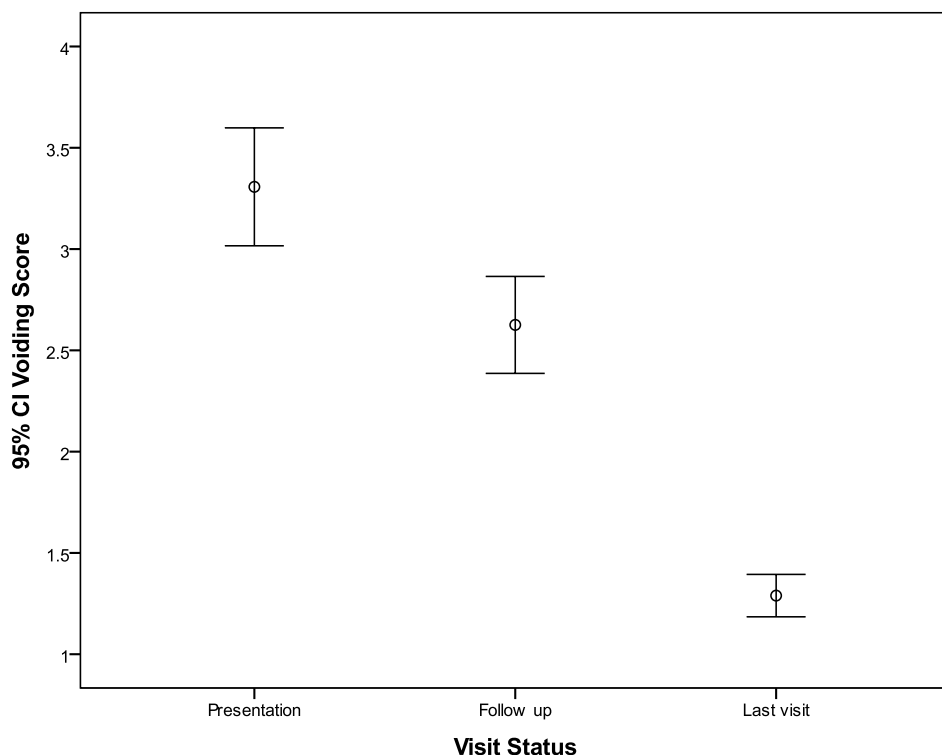
Patients with OAB symptoms, attending an incontinence clinic completed the same questionnaire and underwent urinalysis according to an invariant protocol at each attendance. The six symptoms of voiding difficulty were sought and counted. The voiding symptoms were summed to calculate a score and analysed for concordance with the markers of UTI. Parametric and non-parametric methods were used. A principal components analysis ordered the symptoms according to their ability to explain the variance in a predictive model for pyuria. Pyuria ≥ 10 wbc ul^{-1} was selected as the reference standard because it remains the best surrogate marker of urine infection available (1). This study had greater than 80% power to detect a clinically significant difference ($\alpha = 0.05$).

Results

Between 1999 and 2011 data were collected on 1060 women and 153 men (mean age 50, $sd=22$). All had OAB and 82% had mixed incontinence. Patients with residual urinary retention and isolated stress incontinence were excluded. At presentation patients with any voiding symptoms had higher log pyuria than those without (95% CI= -0.7, -0.17, $p=.004$). The symptom score improved on antibiotic treatment (figure: $F=5$, $p<.001$) parallel to other symptoms. The principal components analysis ordered the symptoms according to their capacity to explain the variance in the predictive model;

1. Hesitancy,
2. Reduced stream,
3. Intermittent stream,
4. Straining to void,
5. Terminal dribbling
6. Postmicturition dribbling.

Voiding symptoms with treatment progress



Interpretation of results

The dichotomies of normal/abnormal have been heavily criticised by Darwinian biologists (2). Their point is vindicated by the plethora of data published recently that incriminate routine tests for (UTI) for providing false conclusions (1).

Tests and their thresholds of abnormality can do very great harm. Nowadays we are encouraged to move away from ordinal diagnostic classifications of “Disease” or “No disease and embrace the fact of biological continua. An effective alternative is to use the Bayesian approach to diagnosis, where the influence of a test is substantially attenuated by the data accrued prior to instigating the investigation. The process achieves a nuanced, probabilistic analysis of diagnostic options which is much less didactic.

Symptoms and the clinical story play a major role in Bayesian analysis such that they can obviate the outcome of a test. This demands that we conscientiously ensure that we understand the real implications of a symptom set, rather than slavishly accepting a test result.

The data described from this study imply that these voiding symptoms should increase our suspicion of the probability of urinary infection. They also serve to sow some disquiet over our current assumptions, that voiding inadequacy leads to infection. The narrative expressed by these patients implies the contrary, that infection causes voiding dysfunction symptoms. If correct this would invert many popular treatment strategies.

Concluding message

These symptoms of voiding dysfunction appear to be important markers of cystitis or urine tract infection. Additionally, they appear to reflect the treatment response to antibiotics in painless LUTS commendably. We may need to revisit our understanding of the pathophysiology of voiding dysfunction.

References

1. J.Urol., 17-3-2010, 183; 1843, 1847.
2. The Ancestor's Tale 2004, 1; 252, 262. ISBN 061861916X

Specify source of funding or grant	None
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	This work was conducted with approval from the Whittington and Moorefield's Research Ethical Committee, London.
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes

