Assessment of Methenamine Hippurate Side Effects: A Questionnaire Study in a Tertiary Care Setting in patients with chronic LUTs.

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Introduction
Methenamine Hippurate (MH) is a widely utilized antibacterial agent for managing urinary tract infections (UTIs) and preventing recurrent episodes, demonstrating non-inferiority to daily low-dose antibiotics (Harding et al., 2022). Despite its effectiveness, MH usage may lead to adverse effects, necessitating systematic assessment (Bakhit et al., 2021).

Objectives
This study aimed to design and validate a questionnaire to systematically evaluate side effects associated with MH usage among patients in a tertiary care setting.

Methods
The questionnaire was developed through an extensive literature review and expert consultation with patients presenting chronic lower urinary tract symptoms (LUTS) at a tertiary care unit. Patients utilizing MH alone or in combination with long-term antibiotic therapy for UTIs were included. The questionnaire encompassed demographic data, medical history, MH usage details, and experienced side effects.

Results
Forty-nine patients participated in the study, with a mean age of 56 years and a predominant representation of white British ethnicity (89.8%). The mean duration of recurrent UTIs (rUTIs) among participants was 13.8 years. 27/49 reported multiple comorbidities, reflecting the complexity of their clinical profiles. The mean duration of MH use was 6 years.

8/49 discontinued MH due to adverse effects, 31/41 were using MH and long term antibiotics and 10/41 were using MH only. After stopping MH, adverse effects typically resolved within <5 days, with one exception lasting 2-3 weeks.

Among the patients that continued to use MH 6/41(14.6%) experienced side effects, with dysuria being the most prevalent 22.5% as illustrated in table one.
On questioning whether MH caused thrush, 10 patients replied yes, 28 patients replied no and the remainder were not sure.19/49 (38.7%) used MH in conjunction with high-dose vitamin C, with varied perceptions of symptom improvement.

Additionally, 80% of patients reported the occurrence of 0-1 UTIs per year when using MH alone. The majority (67.3%) of patients reported improvement in urinary symptoms while using MH, particularly in increased urinary frequency, urgency, urinary incontinence, urine flow and reduction of UTI flare-ups.
Adverse blood test findings were observed in 8 patients, primarily manifesting as abnormal liver function tests which were resolved spontaneously. 4/41 patients had cancer: breast cancer, melanoma, and anal cancer. Among the patients who used MH only 50% developed persistent haematuria on their urine microscopy and they had normal cystoscopy.

Conclusion:

The developed questionnaire provides a reliable tool for evaluating MH-related side effects among patients. MH is effective in rUTIs with minimal side effects. As an ongoing project with a substantial patient cohort, our study aims to further investigate the implications of MH usage on UTI management and patient outcomes.

References:

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Key words:

Methenamine hippurate, urinary tract infections, questionnaire, side effects, LUTs

Table one: Reported side effects associated with MH use

Side effects reported	%
Dysuria	22.5%
Epigastric pain	10.2%
Nausea	10.2%
Skin reaction	6.1%
Urinary urgency	2%
Increased urinary frequency	2%
Bladder pain	2%
Hair fall	2%