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DEFINITION OF RECURRENT URINARY TRACT INFECTIONS IN WOMEN: WHICH ONE TO ADOPT?

Hypothesis / aims of study

Recurrent urinary tract infections (RUTI) in women is a growing health care concern, complicated by management issues related to antibiotic resistance profiles and allergies. For those involved in clinical research, the other challenge is to adopt a definition that is acceptable to all reviewers. We reviewed the various definitions of RUTI recommended by experts and specialty societies to try to reach some consensus.

Study design, materials and methods

A PUBMED search was conducted between 1965 and 2016 on all authors, Clinical Societies, or Guideline Panels on the topic of "RUTI in women." The data was collated based on textual information (Table 1) and then extracted by key topics (Table 2) including urinary symptoms, pyuria on urinalysis, positive nitrates in dipstick, midstream urine collection, urine culture threshold findings in CFU/ml, urine positivity, definition of persistence vs reinfection, interval time between UTI, and negative intervening urine cultures. All data were reviewed by two separate investigators.

Results

The definition of RUTI is highly variable in the literature, ranging from very few criteria such as urinary symptoms and pyuria, to more complex definitions including a negative intervening culture and interval time between recurrences. The separation between persistence and reinfection was often mentioned. The tallying of key elements in this existing list of definitions suggests that a minimum RUTI definition should include urinary symptoms, urine culture CFU/ml threshold, differentiation of bacterial persistence vs reinfection by bacterial species, number of UTIs per year, and negative intervening urine cultures. Other important components of this definition should include bacterial strain differentiation and time interval between infections.

Interpretation of results

The existence of variable definitions of RUTI hampers research in this field as well as the quality of the published data. Authors can reference from very simple to more complex RUTI definitions. This review of major RUTI definition recommendations by expert individuals and specialty societies underlines the lack of uniformity and the need for a more robust and generally agreeable RUTI definition for future studies.

Concluding message

Although RUTI is a recognized clinical entity of growing concern in the field of women health care, its definition was found highly variable in the literature, highlighting the need for a consensus in order to help the quality and comparability of future clinical reports.

Source	Year	Definition					
	_		nce is associated wi	th a different spec	iesthen little doubt	can exist that this is a reinfect	tion. However, where the
McGeachie ¹	1966	"Where the recurrence is associated with a different speciesthen little doubt can exist that this is a reinfection. However, where the species isolated is the same in both episodes then the differentiation requires further classification other than biochemical."					
	+	"Failure is defined as persistence of bacteriuria during treatment, and recurrence as reappearance of bacteriuria after a period with less					
Mabeck ²	1972 1980	than 104 organisms/ml mid-stream urine. Recrudescence is recurrence with bacteria of the same species and serotype as found					
		before the treatment, while reinfection is defined as change in the urinary flora or recurrence with a different organism."					
		"Individuals with 3 episodes in 1 year or 2 episodes in 6 months that were either bacteriologically documented or judged					
Schaeffer ³		compatible with urinary tract infections were included in the study."					
						e enecies and if it ecoure w	ithin 2 wooks after treatmen
Hooton⁴	2001	"A recurrence is often defined clinically as a relapse if it is caused by the same species and if it occurs within 2 weeks after treatment.					
		It is considered a re-infection if it occurs more than 2 weeks after treatment of the original UTI. An exception would be the situation, where					
		a post-treatment urine culture has been investigated and produced no growth of the uropathogen- in which case any subsequent					
		recurrence is a re-infection."					
ACOG Practice Bulletin ⁵	2008	"Recurrent UTI with the same organism after adequate therapy is termed a relapse. Reinfection is a recurrent UTI caused by bacteria					
		' 					l caused by a second isolate
IUGA/ICS ⁶	2009	"Recurrent urinary tr	act infections (UTIs): at least three	symptomatic and m	edically diagnosed UTI in th	ne previous 12 months. The
	2008	previous UTI(s) sho	uld have resolved	prior to a further	UTI being diagnos	ed."	
SOGC Clinical Practice	2010	"When there is recu	rrent infection with t	he same organisr	n despite adequate t	herapy, it is considered a rela	pse. Reinfection is defined as
		recurrent UTI cause	d by a different ba	cterial isolate, o	by the previously	isolated bacteria after a neg	ative intervening culture or
Guideline ⁷		an adequate time p	eriod (≥ 2 weeks)	between infection	ons."	_	-
						in the urinary tract and may be	due to a nidus for persistent
		"Bacterial persistence is cause by reemergence of bacterial from a site within the urinary tract and may be due to a nidus for persistent infection that cannot be eradicated. As a result, the same pathogen is identified in recurrent infections, but episodes of sterile urine may					
EAU- International		1		,		ch episode can be caused by	
Consultation on Urological Diseases ⁸		1 "					
		organisms. Confusion in this form of pathogenesis sometimes occurs because Echerichia coli occur in many different					
		serotypes; thus, recurrent Echerichia coli UTI does not equate to infection with the same organism. With serotyping, re-infection					
	+	can be established, but this is rarely done in the routine clinical setting." "In bacterial persistence, the same bacteria may be cultured in the urine 2 weeks after initiating sensitivity-adjusted therapy. A reinfection					
CUA Guideline ⁹	2011						
		is a recurrent with a different organism, the same organism in more than 2 weeks after treatment, or a sterile intervening					
		culture." *At least three episodes of uncomplicated infection documented by culture in past 12 monthsBacterial persistence may be due to					
EAU Guidelines on	ļ	"At least three epis	•		•	•	
	2015	"At least three epis a nidus for persisten	nt infection in the uri	nary tract. Surgic	al correction or medi	cal treatment for urinary dysfu	
EAU Guidelines on urological infections ¹⁰	2015	"At least three epis a nidus for persisten Reinfection: each ep	nt infection in the uri	nary tract. Surgic ction acquired fror	al correction or medi m periurethral, perine	cal treatment for urinary dysfu eal, or rectal flora."	nction may be needed.
	2015	"At least three epis a nidus for persister Reinfection: each ep "Reinfection describ	nt infection in the uri bisode is a new infe es a new event ass	nary tract. Surgic ction acquired from ociated with reintr	al correction or medi m periurethral, perind oduction of bacteria	cal treatment for urinary dysfu eal, or rectal flora." into the urinary tract from outs	nction may be needed.
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