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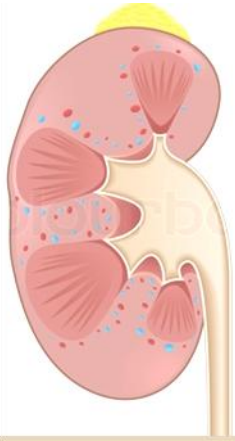


Team 432 Microbiology

LECTURE (1) CYSTITIS

Objectives:

1.
2.
3.
4.
5.
6.
7.

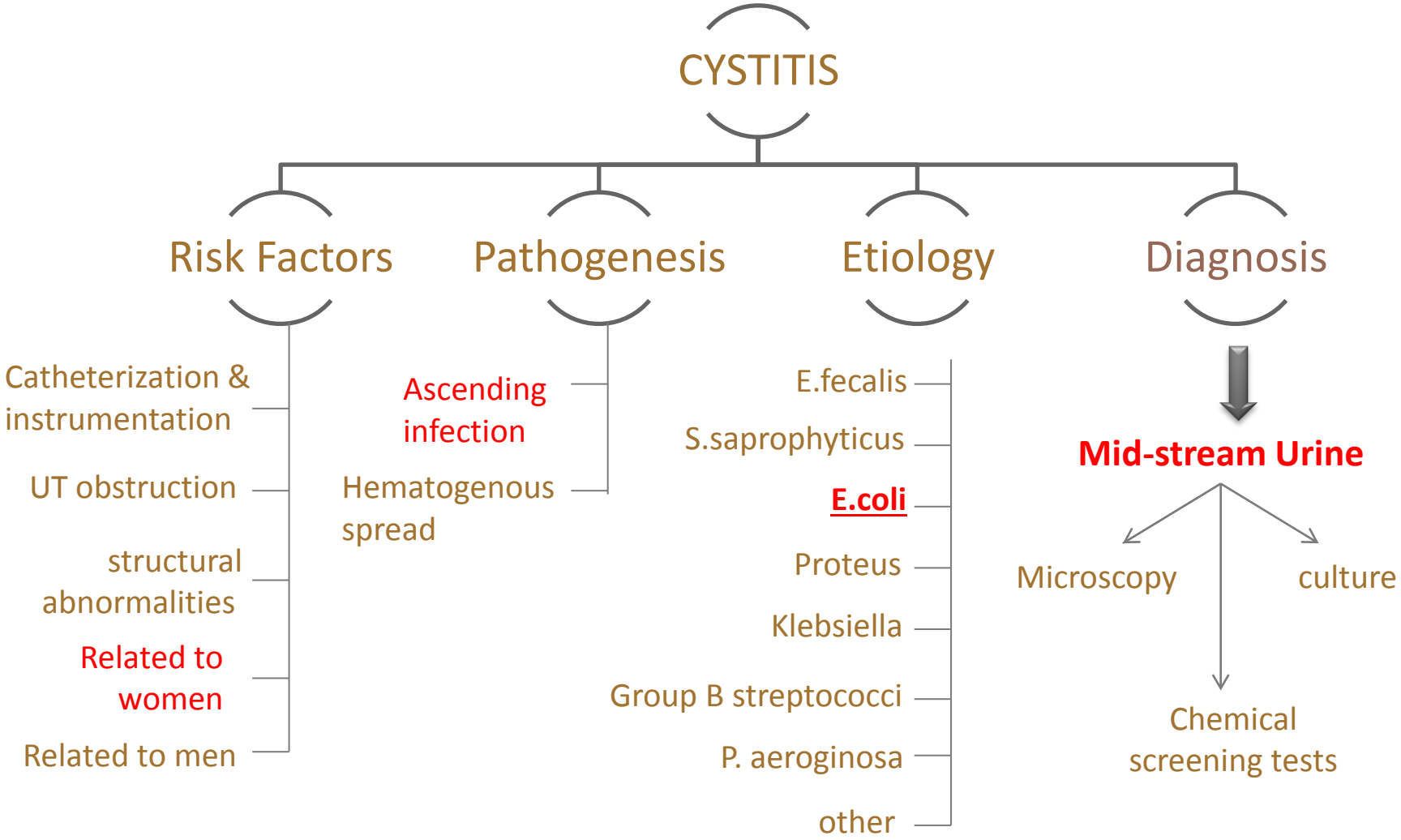
Were not given

Color guide

- **Very important**
- male doctor's notes
- Additional information
- female doctor's notes

MIND MAP

(CYSTITIS)



CYSTITIS: infection of urinary bladder

Introduction

- Patient presents with urinary symptoms and significant bacteriuria (10^5CFU/ml or more)
- Asymptomatic bacteriuria when patient present with significant bacteriuria but without symptoms

Classification

❖ **Uncomplicated UTI:**
(**healthy non-pregnant young female)**

❖ **Complicated UTI :**
Other than healthy non-pregnant young female) like :

- pregnant women
- AIDS patients
- Children
- Adult men

It's also complicated if it was:

- Recurrent infection of UTI:
  For those with recurrent infections, a prolonged course of daily antibiotics is effective
- Relapse infection of UTI:
  antibiotics are not effective

Risk Factors

More risk factors ➔ more common in women

In women :

- Short wide urethra
- Genetic factors
- Sexual intercourse
- Pregnancy (progesterone, obstruction)
- Decreased estrogen production during menopause.

In men:
persistent bacterial infection of the prostate, factors Sexual intercourse

In both sexes:

- Catheterization of the urinary tract
- Diabetes mellitus
- Presence of bladder stone
- structural abnormalities

CYSTITIS (con.)

Pathogenesis of cystitis	Etiologic agents
1) **ascends infection to the bladder** from the urethra. These bacteria are members of the perineal flora (derived from the large intestine flora) & called uropathogens. Toxins produced by them lead to frequent irritation of the mucosal surfaces of the urethra and the bladder. 2) **Hematogenous spread** (much less common): through Blood stream. It has its own etiology. Caused by: 1-M. tuberculosis 2-staphylococcus aureus 3-brucella	**1) Gram positive bacteria:** A. *Enterococcus fecalis* B. **Staphylococcus saprophyticus** (causes honeymoon cystitis "only in female") C. Group B streptococci (mainly pregnant women and diabetics) **2) Gram negitive bacteria:** 1. ***Enterobacteriaceae:*** ➢ **E.coli** is the most common cause (90%). ➢ Klebsiella ➢ Proteus 2. ***Pseudomonas aeroginosa.*** (usually with nosocomial cases) **3) Fungi:** Candida (not common)

Clinical presentation

Symptoms usually of acute onset:

- Dysuria (painful urination or micturation)
- Frequency (frequent voiding)
- Urgency (an imperative call for toilet)
- Hematuria (blood in urine)
- Usually no fever
- Pain and tenderness on the supr-apubic area.

Laboratory diagnosis

For children: Supra-pubic aspiration or catheterization

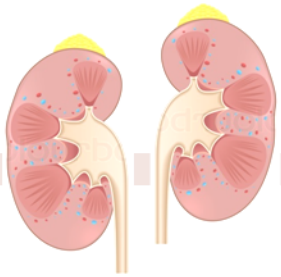
1) **Specimen collection**	It must be: ✓a clean catch urine (Midstream urine) not catheter urine. ✓before stating antibiotic
2) **Microscopic examination**	1. More than 10 WBCs /mm^3 (indicative of infection) 2. One organism per oil-immersion field (indicative) 3. Gram stain (rarely done)
3) **Chemical screening tests**	Urine dip stick will detect: ✓*nitrites:* will be positive with gram negative bacteria ✓*leukocyte esterase:* from inflammatory cells. } Chemical tests are not specific
4) **Urine culture**	✓important to identify bacterial cause and antimicrobial sensitivity. the culture is **quantitative culture**. i.e. large quantity of bacteria ➔ indicative Low quantity of bacteria + symptoms of cystitis ➔ indicative

DOCTOR'S NOTES
(SUMMARY)

- **Uncomplicated UTI:** happens with healthy non-pregnant young female
- E.coli is the most common cause of cystitis
- **S.saprophyticus:** causes honeymoon cystitis (in females only)
- **Proteus spp**: for upper and lower UTI. It produce:

1)urease 2) swarming in plate 3)stone 4) Recurrent infection

- **Recurrent cystitis means:** 3 or more episodes of cystitis/year (Cystoscopy is required in some cases)
- Dysuria will accompany urethritis if it was cause by: *N. gonorrhoeae*
- **treatment of Cystitis: (3-7 days)**



Questions!

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Q1: Patient present with UTI symptoms. To say that the patient has significant bacteuria, bacteria count should be around:

A)10^5 CFU/L B)10^3 CFU/ml C) 10^5 CFU/ml D)10^3 CFU/ L

Q2: Which one of the following causes honeymoon cystitis?

A)S.saprophyticus B) E.coli C) Proteus

Q3: to diagnose UTI, urine sample must be taken from:

A) Supra-pubic aspiration in adults B)catheter urine C)Mid stream urine

Q4: the duration for the treatment of lower UTI "cystitis"?

A)3-7 months B) 10-14 days C)3-7 days D) 10-14 months

1-C
2-A
3-c
4-c