



A Study Of Urinary Pus Cells In Asymptomatic Adolescent Children

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Abstract

Background: Pyuria, or the presence of urinary pus cells, can indicate underlying urinary tract infection (UTI) or subclinical inflammation, even in asymptomatic individuals. Early detection is important in adolescents to prevent complications.

Objectives: To evaluate the prevalence and degree of urinary pus cells in asymptomatic adolescent children and analyze associated demographic and laboratory features.

Materials and Methods: A retrospective study was conducted on 50 asymptomatic adolescent children (age 10–18 years) admitted for routine checkups or minor non-urinary illnesses. Urine samples were analyzed for pus cells via microscopy, and urine culture was performed when pyuria was detected. Clinical and laboratory records were reviewed.

Results: Among 50 children, 12 (24%) showed microscopic pyuria (>5 WBCs/HPF). Male children were 28 (56%) and female 22 (44%). Pyuria was more frequent in females (7/22, 32%) than males (5/28, 18%). Urine cultures were positive in 4 (33%) of pyuric cases, mainly with *Escherichia coli*. No child exhibited urinary symptoms.

Conclusion: Asymptomatic pyuria is present in a significant proportion of adolescents. Routine urine screening in high-risk groups may aid in early identification of subclinical UTI, particularly in females, preventing future complications.

Keywords: Pyuria, Adolescent children, Asymptomatic, Urine microscopy, Urinary tract infection

Introduction

Pyuria, defined as the presence of ≥ 5 white blood cells per high-power field (WBCs/HPF) in centrifuged urine, can indicate urinary tract infection (UTI), inflammation, or renal pathology [1]. While symptomatic UTIs are well-studied in pediatric populations, asymptomatic pyuria in adolescents remains under-researched.

Adolescence is a critical period where urinary tract anomalies or undiagnosed infections can persist

subclinically, increasing the risk of renal scarring or recurrent UTIs [2,3]. Early detection through routine urine analysis is a simple, cost-effective approach to identify children at risk.

This study retrospectively analyzes urinary pus cells in 50 asymptomatic adolescents, highlighting prevalence, gender differences, and associated laboratory findings.

Objectives:

1. To determine the prevalence of urinary pus cells in asymptomatic adolescent children.
2. To evaluate gender differences in pyuria prevalence.
3. To correlate microscopic pyuria with urine culture positivity.

Materials and Methods:

Study Design- Retrospective observational study.

Study Setting- Paediatric and adolescent outpatient and inpatient units of [Your Institute Name].

Study Period: January 2024 – December 2025.

Study Population- 50 asymptomatic adolescents (10–18 years) whose urine samples were collected for routine investigations or minor non-urinary illnesses.

Inclusion Criteria

1. Adolescents aged 10–18 years
2. Asymptomatic for urinary symptoms (no dysuria, frequency, or hematuria)
3. Urine microscopy performed

Exclusion Criteria

1. History of recent UTI or antibiotic use in past 2 weeks
2. Known renal or urinary tract anomalies
3. Incomplete laboratory records

Data Collection

1. Demographics: age, sex
2. Urine microscopy: pus cells per HPF
3. Urine culture if pyuria >5 WBCs/HPF

Laboratory Method

1. Midstream clean-catch urine samples
2. Centrifuged urine microscopy at ×400 magnification
3. Urine culture on CLED/MacConkey agar when pyuria detected

Statistical Analysis

1. Descriptive statistics (mean, percentage)
2. Chi-square test to compare pyuria prevalence between genders
3. Significance level: $p < 0.05$

Results

Table 1: Demographic Distribution

Characteristic	Number of Children (n=50)	Percentage (%)
Male	28	56
Female	22	44
Age 10–13 yr	18	36
Age 14–16 yr	20	40
Age 17–18 yr	12	24

Table 2: Prevalence of Pyuria

Gender	Number with Pyuria (>5 WBCs/HPF)	Percentage (%)
Male	5	18
Female	7	32
Total	12	24

Table 3: Urine Culture Results in Pyuric Children (n=12)

Culture Result	Number of Cases	Percentage (%)
<i>Escherichia coli</i>	3	25
<i>Klebsiella pneumoniae</i>	1	8
No growth	8	67

Table 4: Pus Cell Count Distribution

Pus Cells/HPF	Number of Children	Percentage (%)
0–4	38	76
5–10	7	14
11–20	3	6
>20	2	4

Discussion

This study identified 24% prevalence of pyuria in asymptomatic adolescents, consistent with previous studies reporting rates of 15–30% in similar populations [4,5].

Gender differences were notable, with females more affected (32%) than males (18%), reflecting anatomical predisposition to urinary tract colonization [6].

Urine culture positivity was seen in only 4/12 (33%) of pyuric cases, suggesting that sterile pyuria may result from subclinical inflammation, prior unnoticed infection, or contamination [7].

Routine urine screening in adolescents can help detect subclinical UTIs, prevent recurrent infection, and reduce long-term renal complications [8].

Limitations:

1. Small sample size (50 cases)
2. Retrospective design
3. Lack of follow-up to assess long-term renal outcomes

Conclusion:

Urinary pus cells are present in a significant proportion of asymptomatic adolescents, especially females. While culture positivity is lower, microscopic pyuria warrants attention for potential subclinical UTI.

Routine screening in high-risk groups is recommended to prevent future renal morbidity.

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