

My Clinical Experience Wit Adenovirus In A Tertiary Care Center- A Retrospective Observational Study

Dr. Arasar Seeralar

*Hod, Professor Department Of Pediatrics
Acs Medical College*

Dr M. Rahul Post Graduate

*Department Of Pediatrics
Acs Medical College*

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I. Introduction

- Human adenoviruses (HAdVs) are important causes of infections in young children, these viruses also cause upper and lower respiratory disease, pharyngitis, gastroenteritis, and hemorrhagic cystitis.
- The most prevalent types in recent surveillance studies are HAdV types 3, 2, 1, and 5.
- HAdVs are double-stranded DNA viruses, divided into more than 55 distinct serotypes and other new genetic variants, classified into seven species (A–G).
- Some types are associated primarily with respiratory tract diseases (1–5, 7, 14, and 21) whereas others with gastroenteritis (40 and 41)
- In clinical practice, mixed symptoms are often seen. HAdVs can be transmitted via respiratory tract secretions, fecal-oral spread, and by exposure to infected tissue or blood.
- Symptomatic HAdV infections are commonly characterized by high-grade and longlasting fevers with elevated inflammatory cytokines [1,6]. As a result, a high C-reactive protein (CRP) level may be noted which can often lead to unnecessary use of antibiotics and hospital admissions

II. Aim And Objective

A study on clinical picture (inflammatory markers, characteristics of fever and comorbidity) in different clinical manifestations of human adeno virus infection confirmed using serologic test in hospitalised paediatric patients.

III. Materials

Study design: Retrospective observational study design

Study place: ACS medical college and hospital

Study period: 4 months (January 2023 to April 2023)

Sample size: 54

Methodology

Inclusion Criteria

Patients Between Age Of 0 To 18 Years Diagnosed Of Human Adeno Virus Admitted In The Hospital

Exclusion Criteria Any Other Co-Infection Positive Blood Culture

Methodology

- Hospital medical records were searched for patients of age 0-18 years admitted in hospital and diagnosed with adeno virus infection from January 2023 to April 2023.
- For each patient, a defined set of data (age, gender, symptoms, CRP level, white blood count, liver function tests, and length of hospitalization) was extracted and entered in a excel sheet.
- HAdV infections were confirmed on the first day of admission based on a positive result indicating the presence of HAdV antigen from a nasopharyngeal swab.

- Demographic and clinical characteristics of patients with adeno virus infection
- Age
- Gender
- fever before admission
- Duration of fever before admission
- Antibiotics prior admission
- Duration of hospitalisation

- characteristics of laboratory values in patient groups.
- WBC
- CRP
- PLT
- Total bilirubin
- Direct bilirubin
- Indirect bilirubin
- ALT
- AST

- Based on clinical presentation following groups were defined
- Group A: patients with respiratory symptoms including AOM, upper respiratory tract infections (e.g., conjunctivitis, rhinitis, pharyngitis, tonsillitis, and laryngitis), and lower respiratory tract infections (LRTI, eg. bronchitis, bronchiolitis, and pneumonia). The diagnosis of LRTI was made clinically and/or by using chest-X ray.
- Group B: Patients with only GI symptoms (including diarrhea and vomiting)
- Group C: patients with ocular symptoms (redness, discharge)
- Group D: Patients with both respiratory and GI symptoms

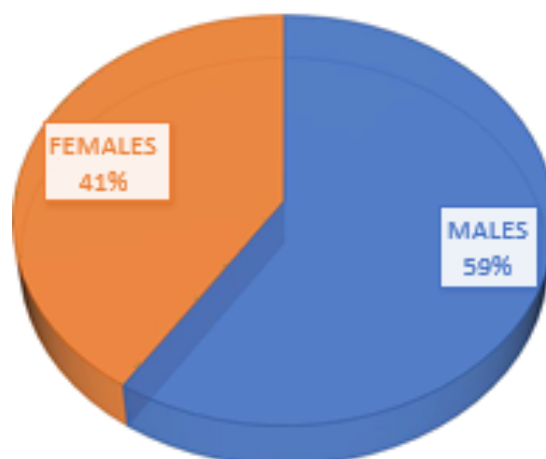
Statistical analysis

Kruskal–Walli's test, chi-square test was used for the comparison of categorical variables. A p-value of <0.05 was considered to be statistically significant. The statistical analysis was performed using the SPSS Statistics software.

IV. Results

- A total of 54 children with HAdV infections were identified. Among them, 22 (40.7%) patients presented with only respiratory symptoms, 15 (27.6%) patients presented with only GI symptoms, and 7 (12.9%) patients has ocular symptoms, 10 (18.5%) patients had mixed symptoms.
- No of males 32(59%), females 22(42%)
- None of our patients had severe complications like myocarditis, meningoencephalitis

NUMBER



Demographic statistics

DEMOGRAPHICS	GROUP A	GROUP B	GROUP C	GROUP D	P- VALUE
FEVER BEFORE ADMISSION	50(92.5)	22 (40.7%)	43 (79.6%)	30 (55.5%)	<0.001#
DURATION OF FEVER BEFORE ADMISSION IN ONLY FEVERISH PATIENTS (MEDIAN; IQR)	3 (1-5)	1 (1-2)	3 (1-4)	3 (2-4)	0.01 *
ANTIBIOTICS BEFORE ADMISSION	21 (42%)	4 (12.9%)	13 (30.2%)	12 (40%)	0.001#
DURATION OF ILLNESS (MEDIAN; IQR)	8 (6-10)	4 (2-7)	6 (4-8)	5 (3-7)	0.01*
DURATION OF STAY IN HOSPITAL	7 (5-9)	5 (3-7)	7(5-9)	7 (5-9)	0.14*

* p-value for Kruskal–Wallis test; # p-value for chi-square test

Characteristics of laboratory values

	GROUP A	GROUP B	GROUP C	GROUP D	P- VALUE *
WBC (X10 ³ /μl) (MEDIAN; IQR)	16.5 (12.3–18.9)	12.3 (8.1–15.2)	13.7 (9.2–18.7)	15.7 (11.8 – 17.6)	0.29
NL RATIO (MEDIAN; IQR)	2.51 (1.31 – 3.50)	1.2 (1.16 – 2.80)	1.48 (1.28 – 3.12)	1.56 (1.34- 3.20)	0.98
PLT (X10 ³ /μl) (MEDIAN; IQR)	308 (251–370)	332 (273–405)	325 (289–363)	275 (232-348)	0.36
CRP (mg/dl) (MEDIAN; IQR)	76.4 (38.4–96.1)	25.4 (20.4–30.6)	65.4 (50.8–84.1)	56.2 (49.6- 72.8)	<0.001

*p-value for Kruskal–Wallis test

V. Discussion

- In our study, we analyzed the clinical picture of HAinfections in the context of the most frequently ordered outpatient blood tests including CBC, CRP, LFT and the clinical manifestations of the infection.
- Our patients with respiratory tract symptoms were substantively significantly younger than patients with symptoms concerning the digestive tract. These patients also had more often and longer periods of fever. As a result, a young child with high-grade fevers for multiple days and respiratory tract symptoms provides doctors with a picture of a serious infection and strong suspicion of bacterial etiology. Greater antibiotic use among patients in this group prior to hospital admission confirms this assumption.
- What is more, patients presenting with symptoms of a respiratory system infection as compared with patients presenting with symptoms concerning a digestive system infection have higher CRP levels including substantively more CRP levels above 100 mg/dL. This additionally hinders decision-making in clinical practice. The CRP level traditionally indicates a bacterial infection. Without another etiology explaining the clinical picture, it may result in the initiation of antibiotic therapy.
- In the presented study, HAdV infections causing digestive tract symptoms were not associated with significant increases in CRP levels. This may suggest that serotypes connected with digestive tract infections employ different penetration mechanisms to get inside a cell and cause hepatitis and elevates the ALT and AST levels
- Our study has significant limitations. It was a retrospective study with limited sample size,

VI. Conclusion

- Patients with HAdV infections and respiratory symptoms as compared with patients with GI symptoms are more feverish (more frequent and longer fevers prior to admission) and have higher CRP levels.
- In the group of children with respiratory presentations, there was no correlation between CRP level and duration of fever, the occurrence of AOM, LRTI symptoms, and the age of the patient.
- Antibiotic treatment prior to admission was very common in the group of patients with respiratory symptoms.
- Early detection as well as sharing the knowledge about the natural course of HAdV infections (respiratory system infections are accompanied most commonly by high infection markers) may have an impact on the rational application of antibiotic therapy

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