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Case Report

Measles in Adult Patients: A Case Series of 15 Cases from the Medicine Inpatient Department of TMSS Medical College, Bangladesh

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Abstract

Background: Measles is a highly contagious viral illness predominantly affecting children; however, outbreaks among adults have been increasingly reported in different regions of the world. Adult measles is often associated with more severe clinical manifestations and complications than childhood disease. This case series describes the clinical characteristics, laboratory findings, management, and outcomes of 15 adult measles patients admitted to the Medicine Inpatient Department of TMSS Medical College, Bangladesh.

Materials and Methods: A prospective descriptive case series was done among 15 consecutive adult patients admitted with clinically and by molecular test Reverse Transcription Polymerase Chain Reaction (RT PCR) confirmed measles between March and May 2026. Demographic data, clinical manifestations, laboratory investigations, treatment modalities, complications, and outcomes were analyzed.

Results: The mean age of the patients was 26.8 ± 6.1 years (range 18–42 years). Nine (60%) were male and six (40%) were female. All patients presented with fever and generalized maculopapular rash. Other common symptoms included cough (80%), conjunctivitis (67%), coryza (60%), headache (53%), and sore throat (47%). Koplik spots were observed in six patients (40%). Laboratory findings revealed lymphopenia in seven patients (46.7%), elevated liver enzymes in five patients (33.3%), and thrombocytopenia in one patient (6.7%). Complications occurred in four patients, including 26.7% pneumonitis (n=4), 6.7% otitis media (n=1), and 6.7% respiratory failure (n=1). All patients recovered with supportive treatment, and no mortality was recorded.

Conclusion: Adult measles remains an important differential diagnosis in adults presenting with acute febrile rash illness. Early recognition, isolation, and supportive management are crucial for preventing complications and controlling outbreaks.

Keywords: Measles, Adult measles, Rash, Viral exanthem, Bangladesh, Case series.

Introduction

Historically categorized as a childhood illness, measles among adult populations is increasingly recognized as a public health concern worldwide as well as within South Asia.^{1,2} Widespread immunization initiatives have remarkably diminished the global burden of the disease. However, sporadic outbreaks persist worldwide, predominantly driven by suboptimal vaccination coverage or pockets of incompletely vaccinated populations.^{2,3} Measles is an acute, highly contagious viral infection caused by the measles virus, a member of the Paramyxoviridae

family.⁴ Classic clinical features typically include high fever, cough, coryza, conjunctivitis, and a pathognomonic generalized maculopapular rash.⁵

This demographic shift is clinically significant; as adult measles frequently manifests as a more severe clinical course.^{6,7} Adults experience higher rates of hospitalization and are significantly more susceptible to debilitating complications, including pneumonitis, severe hepatitis, otitis media, and neurological sequelae.^{2,6,7} In Bangladesh, despite significant

advancements in national immunization coverages, localized outbreaks continue to challenge public health infrastructure.^{4,5} To better understand these shifting dynamics, this study presents a descriptive case series of fifteen adult measles patients admitted to the Medicine Inpatient Department of TMSS Medical College Hospital in Bogura, Bangladesh. We evaluated their clinical presentations, laboratory findings, associated complications, and therapeutic outcomes to inform better clinical management and outbreak control strategies.

Materials and Methods

Study Design & Site

This hospital-based prospective descriptive case series was conducted at the Medicine Inpatient Department, TMSS Medical College Hospital, Bogura, Bangladesh. The study period spanned from March 2026 to May 2026.

Study Population & Selection Criteria

The study population comprised adult patients (≥ 18 years) admitted with clinically suspected and laboratory-confirmed measles. The inclusion criteria required:

- Age ≥ 18 years.
- Fever with generalized maculopapular rash.
- Presence of one or more constitutional features: cough, coryza, conjunctivitis, or Koplik spots.
- Molecular confirmation via RT PCR.

Exclusion criteria included patients presenting with alternative causes of febrile rash illness or those with incomplete clinical records.

Data Collection & Statistical Analysis

Relevant clinical, demographic, laboratory, and outcome parameters were systematically recorded on patients admission using a standardized data collection form and statistical analysis done while preparing manuscript. Descriptive statistics were utilized for analysis. Continuous variables are expressed as mean $\pm$ standard deviation (SD), while categorical parameters are reported as absolute frequencies and percentages.

Results

Demographic Characteristics

Table I: Demographic characteristics of patients with measles.

Variable	Value (N = 15)
Number of cases	15
Mean age	26.8 $\pm$ 6.1 years
Age range	18–42 years
Male	9 (60%)
Female	6 (40%)

A total of 15 consecutive adult patients met the inclusion criteria during the study timeframe. The cohort displayed a mean age of 26.8 $\pm$ 6.1 years, with ages extending from 18 to 42 years. Gender distribution revealed a male preponderance with 9 cases (60.0%) compared to 6 female cases (40.0%) (Table I).



Image 1: Erythematous maculopapular rash on the face, neck and the trunk.

Table II: Clinical presentation of measles patients.

Clinical Feature	Number (%)
Fever	15 (100.0)
Rash	15 (100.0)
Cough	12 (80.0)
Conjunctivitis	10 (66.7)
Coryza	9 (60.0)
Headache	8 (53.3)
Sore throat	7 (46.7)
Koplik spots	6 (40.0)
Myalgia	6 (40.0)
Diarrhea	2 (13.3)

Clinical Presentation

Fever and a generalized maculopapular rash were present in all 15 patients (100.0%). The rash typically appeared 3–5 days after the initial onset of fever, following a classic cephalocaudal pattern of spread from the face downwards to the trunk and extremities (Image 1). Prominent systemic prodromal and constitutional features included cough (80.0%), conjunctivitis (66.7%), and coryza (60.0%). Pathognomonic Koplik spots were identified in only 6 patients (40.0%) (Table II).

Table III: Ct values in RT PCR for measles, presence of pneumonia, necessity of ICU support and duration of hospital stay in measles patients.

Patient ID	Ct Value	Pneumonia	ICU Support	Hospital Stay (Days)
P01	14.2	Yes	No	10
P02	15.8	Yes	No	9
P03	17.1	Yes	Yes	8
P04	18.7	Yes	No	7
P05	24.1	No	No	7
P06	24.3	No	No	6
P07	24.5	No	No	6
P08	24.7	No	No	5
P09	24.9	No	No	5
P10	25.0	No	No	5
P11	25.2	No	No	5
P12	25.4	No	No	4
P13	25.6	No	No	4
P14	25.8	No	No	3
P15	25.9	No	No	3

Laboratory Findings

Confirmation via RT PCR for Measles was done for all 15 patients (100.0%). The most frequent hematological finding was transient lymphopenia, present in 7 patients (46.7%), followed by leukopenia in 4 patients (26.7%). Biochemical analysis identified elevated transaminases (ALT/AST) in 5 patients (33.3%), signaling acute viral hepatic involvement. Inflammatory markers were prominently elevated, with 9 patients (60.0%) demonstrating high C-reactive protein (CRP) levels. Among the 15 hospitalized adult measles patients, Ct values ranged from 14.2 to 25.9. Four patients had Ct values below 20, indicating a high viral load. All four of these patients developed measles-associated pneumonia, and one required ICU admission due to severe respiratory compromise. In contrast, none of the patients with Ct values between 24 and 26 experienced respiratory complications. The mean duration of hospitalization was 5.8 ± 2.1 days, with longer hospital stays observed among patients with lower Ct values (Table III). Pearson correlation analysis demonstrated a strong inverse relationship between RT-PCR Ct value and duration of hospital stay ($r = -0.83$, $p < 0.001$), indicating that patients with lower Ct values (higher viral loads) experienced significantly longer hospitalizations.

These findings support the potential utility of Ct value as a prognostic marker for identifying adult measles patients at risk of severe clinical outcomes.

Table IV: Complications developed in measles patients.

Complications	Number of Patients
Pneumonitis	4
Otitis media	1
Respiratory failure	1
No complication	11

Complications & Treatment

Clinical complications were documented in 4 patients (26.7%). Pneumonitis was the leading manifestation, occurring in all 4 complicated cases. One patient experienced concomitant otitis media, and one patient

rapidly progressed to acute hypoxemic respiratory failure, requiring intensive care module intervention (Table IV).

All 15 patients were managed under isolation precautions. Mainstay therapeutic interventions included adequate hydration, antipyretics, nutritional support, and systematic high-dose Vitamin A supplementation. Patients presenting with complications received targeted medical therapy, including oxygen titration and empirical antimicrobial coverage where secondary bacterial pathogens were strongly suspected.

Clinical Outcomes

The overall clinical trajectory was favorable, with a 100.0% recovery rate. One patient required shifting to the Intensive Care Unit (ICU) due to acute respiratory failure but was successfully managed and stepped down. Zero mortality was recorded. The mean hospital stay was 5.8 ± 2.1 days.

Discussion

This prospective case series underscores the persistence and changing epidemiological paradigm of measles within adult populations in South Asia, specifically focusing on data from a tertiary care center in Bogura, Bangladesh. While historically considered an exclusively pediatric disease, shifting susceptibility due to waning vaccine-induced immunity, incomplete primary vaccination coverage, or lack of natural boost may be responsible for a rise in adult outbreaks globally.^{2,8} The demographic configuration observed in this study, featuring a mean age of $26.8 (\pm 6.1)$ years and a male predisposition (60%), closely aligns with reports from neighboring regional and international cohorts.^{2,9} The adults included in this study were 18–42 years of age and therefore were born during different phases of Bangladesh's national measles immunization programme. Older participants may have been born before high vaccination coverage was achieved, whereas younger adults may have missed routine vaccination, supplementary immunization campaigns, or the recommended second vaccine dose. Although waning immunity has been proposed as one explanation for adult measles outbreaks, our study did

not assess vaccination history or measles-specific antibody titres. Consequently, we could not determine whether susceptibility resulted from primary vaccine failure, secondary vaccine failure, incomplete vaccination, or absence of vaccination. Future studies incorporating verified vaccination records and serological testing are needed to clarify these mechanisms.

For instance, recent epidemiologic studies investigating adult outbreaks in South and Southeast Asia have similarly demonstrated an increased vulnerability among young adults in their third decade of life, a demographic cohort that often displays suboptimal antibody titers over time.^{2,3}

Our clinical findings closely resemble those reported in studies from Europe and Somalia. Fever and generalized maculopapular rash were present in all patients, while cough, conjunctivitis, and coryza constituted the classic prodromal triad. Hassan et al., during a measles outbreak in Somalia, similarly reported fever and rash as universal manifestations, with respiratory symptoms being highly prevalent among hospitalized adults.¹⁰ Likewise, Romanian investigators reported that fever, rash, cough, and conjunctivitis remained the predominant presenting features among adult patients requiring hospitalization.¹⁰ These findings reinforce that the classical clinical presentation of measles remains remarkably consistent across diverse geographical settings.

Our clinical findings confirm that classic hallmarks, namely fever and a generalized maculopapular rash, were present in all the cases we recorded (100%). However, the lower prevalence of pathognomonic Koplik spots (40%) noted in our series deserves clinical attention. International literature notes Koplik spots in up to 70% to 80% of classic pediatric presentations^{10,11}. This discrepancy accentuates the potential for modified clinical phenotypes in adults, making the absolute reliance on this clinical sign misleading. Previous European and international studies have reported higher frequencies, particularly when patients are evaluated during the early prodromal phase before the appearance of the generalized rash.^{2, 10}

The lower prevalence observed in our cohort may reflect delayed presentation to hospital after rash onset, emphasizing that the absence of Koplik spots should not exclude the diagnosis of measles in adults during outbreaks.

Clinicians operating in endemic regions must maintain a high index of suspicion based on the prodrome-cough (80%), conjunctivitis (66.7%), and coryza (60%)-regardless of mucosal findings.^{6,11}

The frequency of complications in our patients also corresponds well with previous international reports. Hematologically and biochemically, transient lymphopenia (46.7%) and elevated aminotransferases (33.3%) emerged as the most frequent anomalies. The observed transient immunosuppression is a well-characterized feature of acute measles virus infection, resulting from the viral targeting of CD150+ lymphocytes.^{2,4} This process predisposes adult patients to severe secondary infections and localized organ involvement, such as acute hepatic parenchymal inflammation.^{2,6} Notably, complications manifested in approximately 27% of our patient cohort, with pneumonitis being the primary contributor (n=4). This stands in stark agreement with global data identifying measles-associated pneumonia (MAP) as the most common complication necessitating intensive hospitalization in adults.^{6,12} Similar findings have been reported in adult cohorts from Europe and Romania, where pneumonitis represents the leading cause of hospitalization, intensive care admission, and severe disease.¹³ Adult patients are known to experience more severe respiratory complications than children because of greater inflammatory responses and higher rates of secondary bacterial infections.^{2,6}

One of our patients progressed to acute respiratory failure requiring ICU admission (6.7%), a finding that reflects international literature highlighting that adult measles incurs a significantly higher risk of severe visceral damage and intensive care requirement than standard childhood courses.^{6,13-15}

An important finding of the present study was the strong inverse correlation between RT-PCR cycle threshold (Ct) values and duration of hospitalization (r

$= -0.82$, $p < 0.001$), indicating that patients with lower Ct values, which reflect higher viral loads, experienced more prolonged hospital stays. Furthermore, all patients with Ct values below 20 developed measles-associated pneumonia, and one required intensive care support, whereas none of the patients with Ct values between 24 and 26 experienced respiratory complications. These findings suggest that viral burden at the time of diagnosis may be closely associated with disease severity in adult measles. Although RT-PCR Ct values are primarily used for laboratory diagnosis, increasing evidence from respiratory viral infections indicates that lower Ct values generally correlate with greater viral replication and worse clinical outcomes, although Ct values should not be considered direct quantitative measures of viral load because they are influenced by specimen collection, timing of testing, and assay methodology.¹⁶⁻¹⁸ Similar associations between low Ct values and prolonged hospitalization or severe disease have been reported in COVID-19 and influenza.¹⁶⁻¹⁸ While published evidence evaluating Ct values as prognostic markers in adult measles remains limited, our findings suggest that Ct values may provide additional prognostic information when interpreted together with clinical assessment. Patients presenting with low Ct values may benefit from closer monitoring, early identification of respiratory complications, and timely supportive management. Nevertheless, Ct values should be interpreted cautiously because of inter-laboratory variability and lack of assay standardization.^{17,18} Larger prospective multicenter studies are required to validate Ct values as independent prognostic markers in adult measles.

Despite the clinical severity and systemic complications, the overall mortality rate in this series was 0%. This highly favorable clinical trajectory can be directly attributed to early laboratory-supported confirmation and management strategy including immediate airborne isolation precautions, aggressive hydration, and systematic Vitamin A supplementation.^{5,13} This study has certain limitations, including its modest sample size, and the lack of exact quantitative vaccination histories for the subjects.

Nonetheless, these findings carry pivotal public health implications for Bangladesh and similar middle-income countries. They highlight the urgent need for robust surveillance, adult booster programs, and the maintenance of aggressive infection-control protocols in tertiary medical facilities to mitigate future outbreak vectors^{14,15}. This study reinforces the importance of considering measles in adults presenting with fever and rash, particularly during outbreaks or when epidemiological links are present.^{2,14}

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