

# Acute Myocarditis: Clinicodemographic Features and Outcome in Children Admitted at Tertiary Care Hospital Nawabshah

Juverya Naqvi<sup>1</sup>, Ali Akbar Siyal<sup>1</sup> and Tabinda Taqi<sup>2</sup>

Acute Myocarditis:  
Clinicodemographic Features  
and Outcome in Children

## ABSTRACT

**Objective:** To evaluate clinicodemographic features and outcome of acute myocarditis in children admitted at PMC hospital.

**Study Design:** Retrospective study

**Place and Duration of Study:** This study was conducted at the Department of Pediatric Medicine, Peoples University of Medical & Health Sciences, Nawabshah from January 2015 to December 2015.

**Materials and Methods:** We performed a retrospective study of patients aged 1 month to 16 years who were admitted PMC hospital, Nawabshah and discharged with a diagnosis of myocarditis were studied in retrospect. Clinical and demographic features and outcome were chronicled.

**Results:** Files of total of 37 patients with the diagnosis of myocarditis were collected and data was extracted between January 2015 and December 2015. Median age of affected children was 48 months with (35%) 13 females and (64.86%) 24 males. The primary complaint with which patient presented was respiratory distress (56%) and least common symptom was abdominal pain (5%) while the most recurrently occurring examination finding was tachycardia (68%). Averagedays in hospital were 11 days. The outcome regarding death and discharge was; 64.5% expired and rest was discharged.

**Conclusion:** Although Myocarditis is not a very common disease but its presentation mimics with symptoms of common diseases like RTI and our study also showed that the most common presentation was respiratory distress. Hence it is very important to look carefully at children presenting with such common symptoms but do not improve on antibiotics.

**Key Words:** Acute Myocarditis, Clinicodemographic Features, Children

**Citation of articles:** Naqvi J, Siyal AA, Taqi T. Acute Myocarditis: Clinicodemographic Features and Outcome in Children Admitted at Tertiary Care Hospital Nawabshah. Med Forum 2018;29(10):43-45.

## INTRODUCTION

Myocarditis is described as myocardial inflammation, injury or necrosis, and ultimately fibrosis. Cardiac enlargement and diminished systolic function occur as a direct result of the myocardial damage.<sup>1</sup> Myocarditis is linked with high morbidity and mortality<sup>2</sup>. The etiology of myocarditis could be infectious as well as non-infectious, although viruses are the most common causative organisms responsible for myocarditis in all age groups. The exact incidence of myocarditis is quite problematic to assess as clinical presentations are not specific and ultimate diagnostic tests are not routinely done in all patients but estimated incidence

from various studies is 1 per 100000 children<sup>3</sup>. The clinical presentation may vary in children, especially in young children. Clinical spectrum ranges from mild subclinical forms to overt heart failure. As initial presentation of myocarditis may be vague, it may mimic common pediatric problems<sup>4,5</sup>. The scenario regarding outcome fluctuates from recovery to chronic disease and death<sup>6</sup>. The diagnostic modalities used to diagnose a case of acute myocarditis include Chest X-ray, ECG, Echocardiography, cardiac biopsy, inflammatory markers and cardiac enzymes<sup>7</sup>. But the diagnostic approach depends on the center where the child presents because not every center has the facilities for cardiac biopsy. As myocarditis presents with such common symptoms that a high index of suspicion is required by the attending physician to guide him/her towards the diagnosis. Various scoring systems are under study to help in clinical diagnosis of myocarditis in children but are somehow deficient in one or other area so cannot be relied upon<sup>8</sup>. Prognosis in case of acute myocarditis depends on the state in which the patient is received, if the patient is received in earlier stages of disease the prognosis is better, but as the condition progresses to fulminant myocarditis and

<sup>1</sup>. Department of Pediatric Medicine / Physiology<sup>2</sup>, Peoples University of Medical & Health Sciences, Nawabshah.

Correspondence: Juverya Naqvi, Assistant Professor of Pediatric Medicine, Peoples University of Medical & Health Sciences, Nawabshah.

Contact No: 0333-1028270

Email: tabindaqaiserpk@gmail.com

shock the prognosis obviously becomes guarded. Regarding treatment options in pediatric myocarditis, there have been so many advances like use of ECMO and ventricular assist device in patients with fulminant myocarditis<sup>9</sup>. Over all acute myocarditis is a multi-faceted disease in children, and there is huge void of research in this regard, our study is just a small step taken in this huge field.

## MATERIALS AND METHODS

This study was conducted at the Department of Pediatric Medicine, Peoples University of Medical & Health Sciences, Nawabshah from January 2015 to December 2015.

We performed a retrospective study of patients aged 1 month to 16 years who were admitted PMC hospital, Nawabshah and discharged with a diagnosis of myocarditis were studied in retrospect. Clinical and demographic features and outcome were recorded.

## RESULTS

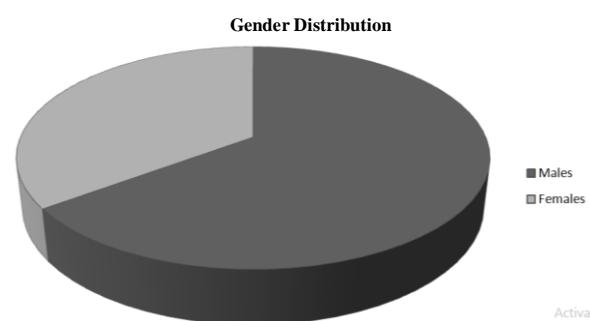
Records of a total of 37 patients with the diagnosis of myocarditis were appraised retrospectively between January 2015 and December 2015. Median age of patients was 48 months with (35%) 13 females and (64.86%) 24 males.

**Table No.1: Presenting Complaints of Patients**

S.No:	Presenting complaint	Number of Patients
1	Respiratory distress	21
2	Fever	16
3	Palpitation	5
4	Chest pain	5
5	Abdominal pain	2

**Table No.2: Common Clinical Findings**

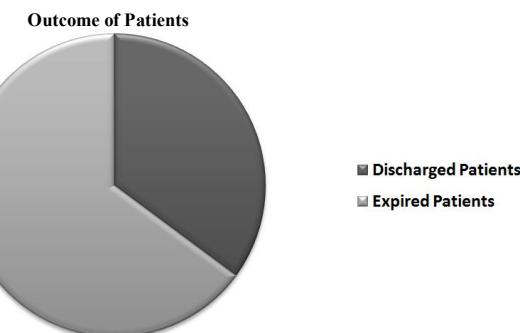
S.No:	Clinical findings	Number of Patient
1	Tachycardia	26
2	Tachypnea	21
3	Fever	18
4	Low Blood Pressure	18
5	Hepatomegaly	16



**Figure No.1: Gender Distribution of Patients**

The most recurrent presenting complaint observed was respiratory distress (56%) and least common symptom

was abdominal pain (5%) while the most frequently occurring examination finding was tachycardia (68%). Average Interval of the hospital stay was 11 days. The outcome regarding death and discharge was: 64.5% expired and rest was discharged.



**Figure No.2: Outcome of Patients**

## DISCUSSION

In our study we have 37 patients admitted with the diagnosis of acute Myocarditis. Myocarditis is not a common disease in pediatric population<sup>6, 10</sup> but associated with high mortality even with advanced life support. Median age in our study was 48 months (4 years); in another study earlier age peak was also seen like in our study<sup>10</sup>. Male predominance is observed here, which may indicate the male child preference for seeking medical care, this matches with this study that shows 68% male patients<sup>11</sup>. A contrasting gender distribution is seen in another study<sup>12</sup>. Myocarditis presents with a wide diversity of symptoms that in most cases do not indicate an underlying cardiac problem<sup>13</sup> as in our study the most frequent presenting complain reported by parents was respiratory distress, a similar study from Canada show that most patients diagnosed later as myocarditis were initially admitted as asthma and pneumonia<sup>11,12</sup>. The rest of the clinical findings are similar with other studies like this study from Taiwan which shows almost same frequency of symptoms<sup>14</sup>. All these studies including ours shows a similar array of signs and symptoms, which in most cases causes confusion in initial diagnosis of Myocarditis. The average length of stay in hospital was seen as 11 days; in reviewing the literature authors couldn't find a matching study to take reference from regarding length of stay at hospital. But in one study the average time between diagnosis and heart transplant or death is 8.4 months<sup>15</sup>. Death as final outcome was seen in majority of patients i.e. 64.5%, which show a high mortality in our set up, but this also indicates that our set up lacks ventricular support and ECMO. Sunil J et al shows that despite state of the art facilities there is still high mortality in pediatric population affected by myocarditis<sup>16</sup>, a similar study from Japan shows a high mortality in case of fulminant myocarditis but again this study is done in a highly equipped center<sup>17</sup>. Overall

there is a huge need of further studies in this regard, because myocarditis is a disease in children that presents with common sign and symptoms but outcome is worse.

## CONCLUSION

Acute myocarditis in pediatric population presents with symptoms that can be mistaken for other everyday pediatric problems; respiratory presentations were most common. A high index of clinical notion for myocarditis is required. All children should undergo basic investigations if routine therapy fails.

### Author's Contribution:

Concept & Design of Study: Juverya Naqvi  
 Drafting: Ali Akbar Siyal  
 Data Analysis: Tabinda Taqi  
 Revisiting Critically: Juverya Naqvi, Ali Akbar Siyal  
 Final Approval of version: Juverya Naqvi

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

## REFERENCES

1. Kliegman, Robert, et al. Nelson Textbook of Pediatrics. 20<sup>th</sup> ed. Philadelphia PA: Elsevier; 2016.
2. Feldman AMMC, Namara D, Myocarditis N. Engl J Med 2000;343:388-98.
3. Levine MC, Klegman D, Teach SJ. Update on myocarditis in children, Curr Opin Pediatr 2010; 22:278.
4. Freedman SB, Haladyn JK, Floh A, Kirsh JA, Taylor G, Freedman JT. Pediatric myocarditis: emergency department clinical findings and diagnostic evaluation. Pediatr 2007;120(6): 1278-85.
5. Drossner David M, et al. Cardiac disease in pediatric patients presenting to a pediatric ED with chest pain. Am J Emerg Med 2011;29(6):632-638.
6. Haider N, et al. Clinicodemographic features and outcome of acute myocarditis in children admitted at tertiary care hospital. Int J Cardiol 2016;221: 42-5.
7. Checchia, Paul A, Kulik, Thomas J. Acute viral myocarditis: Diagnosis. Pediatr Critic Care Med 2006;7(6):S8-S11.
8. Chong SL, Bautista D, Ang AS. Diagnosing paediatric myocarditis: what really matters? Emerg Med J 2015;32(2):138-143.
9. Ghelani SJ, Spaeder MC, Pastor W, Spurney CF, Klugman D. Demographics, trends, and outcomes in pediatric acute myocarditis in the United States, 2006 to 2011. Circ Cardiovasc Qual Outcomes 2012;5(5):622-7.
10. Stephen B, Freedman J, Haladyn K, Floh A, Kirsh JA, Taylor G. Pediatric Myocarditis: Emergency Department Clinical Findings and Diagnostic Evaluation. Pediatr 2007;120(6).
11. Freedman SB, Haladyn JK, Floh A, Kirsh JA, Taylor G, Pediatric Myocarditis: Emergency Department Clinical Findings and Diagnostic Evaluation. Pediatr 2007;120(6).
12. Durani Y, Egan M, Baffa J, Selbst SM, Nager A. Pediatric myocarditis: presenting clinical characteristics. Am J Emerg Med 2009;27(8):942-7.
13. Merchant Q, Haque A, Hassan B. Management of acute myocarditis in children. JPMA 2013. Available online: [http://jpma.org.pk/full\\_article\\_text.php?article\\_id=4257](http://jpma.org.pk/full_article_text.php?article_id=4257)
14. Hsiang JU Hsiao, et al. Clinical Presentation of Pediatric Myocarditis in Taiwan. Pediatr Neonatol 2011;52:135-9.
15. English RF, Janosky JF, Ettedgui JA, Webber SA. Outcomes for children with acute myocarditis. 2004;14(5):488-493.
16. Ghelani SJ, Spaeder MC, Pastor W, Spurney CF, Klugman D. Demographics, Trends, and Outcomes in Pediatric Acute Myocarditis in the United States, 2006 to 2011. <https://doi.org/10.1161/circoutcomes.112.965749> Circulation: Cardiovascular Quality and Outcomes. 2012;5:622-627 Originally published September 18, 2012.
17. Saji T, et al. Comparison of the Clinical Presentation, Treatment, and Outcome of Fulminant and Acute Myocarditis in Children. <https://doi.org/10.1253/circj.CJ-11-1032>