# CLINICAL FEATURES OF PEDIATRIC ACUTE RHABDOMYOLYSIS

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## Introducton

Rhabdomyolysis is a clinical picture which is rarely seen in children. Pediatric rhabdomyolysis is a diagnosis that pediatricians need to be able to recognize because prompt treatment can prevent potential complications, such as acute kidney injury. It can result from a wide variety of disorders, such as trauma, infection, exercise, prolonged seizure and medications, but in the pediatric population, infection and inherited disorders are the most common causes of rhabdomyolysis.

The pathophysiology behind rhabdomyolysis is complex and still being researched, but having a firm understanding of the cascade that results when muscle injury occurs is essential for proper management. Early recognition is important to prevent AKI through the use of aggressive hydration.

The cause of acute pediatric rhabdomyolysis is different from that of adult rhabdomyolysis. The risk of acute renal failure in children is much less than the risk reported for adults.

## Objectives

Here we aim to compare the causes, clinical presentation, and prevalence of acute renal failure (ARF) and clinical features in pediatric rhabdomyolysis with the published data for adults. Guidelines for managing pediatric rhabdomyolysis currently do not exist, but our study aims to support literature general approach to diagnosis, acute management, follow-up, and prevention of pediatric acute rhabdmyolisis.

## Materials and Methods

We performed a retrospective chart review to identify patients with creatinine kinase levels of 1000 IU/L who were treated in the pediatric intensive care unit between january 2016 and august 2021. Gender, age, season of admission, length of hospital stay, treatment methods, presence of additional disease, admission diagnosis, other specific laboratory findings, cardiac evaluations, presence of renal failure, and outcome of the patients who were decided to be included in the study were recorded. Patients whose file data could not be found and who could cause hereditary CK elevation, such as muscle disease, were excluded from the study.

## Results

Two hundred twenty one patients met study eligibility (141 male and 80 female), with a median age of 6,5 years. The most common causes of pediatric rhabdomyolysis were infection (31,2%) and trauma (36,2%) in our study. ARF developed in 24.4% of the patients. 37.6% of them had accompanying chronic diseases, epilepsy and cerebral palsy. Nearby third of one the patients (29.1%) had been died. Other patients (70.9%) were discharged. Most serologic agent was viruses (%65,2) and rhinovirus was the most common cause.

Table 1. Laboratory findings

| | Med±SS (Min-Max) |
|---|---|
| CK (U/L) | 7571,0±17873,9 (1002,0-132800,0) |
| LDH (U/L) | 1904,8±2900,4 (211,0-19762,0) |
| BUN (mg/dL) | 64,8±68,7 (9,0-430,0) |
| Uric asid (mg/dL) | 7,4±6,5 (,3-46,5) |
| Creatinin (mg/dL) | ,9±1,1 (,1-7,3) |
| AST (U/L) | 1413,9±8706,2 (21,0-127000,0) |
| ALT (U/L) | 431,1±1069,4 (3,0-10111,0) |
| Na (mEq/L) | 148,4±15,4 (118,0-210,0) |
| K (mEq/L) | 4,5±1,2 (1,8-10,5) |
| Ca (mEq/L) | 8,4±1,3 (4,6-12,0) |
| P (mEq/L) | 5,3±2,7 (,8-19,8) |
| Troponin (ng/ml) | 105,7±1292,1 (,0-16500,0) |
| CRP (mg/dL) | 76,9±68,9 (,0-207,0) |
| WBC (10e³/µL) | 12204,6±8593,2 (190,0-49310,0) |

Table 2. Treatment options

| | n | % |
|---|---|---|
| $HCO_3$ | 69 | 31,2 |
| Mannitol | 65 | 29,4 |
| Diuretics | 53 | 24,0 |
| Ca gluconate | 51 | 23,1 |
| Insülin | 10 | 4,5 |
| Diazepam | 6 | 2,7 |
| Cloralhydrate | 3 | 1,4 |
| Trihexyphenidyl | 1 | 0,5 |

## Conclusions

Currently, studies on pediatric rhabdomyolysis are limited, and in our study, ARF rates were found to be lower in children compared to adults. When the literature was reviewed, unlike previous studies, the use of chloralhydrate in rhabdomyolysis due to dystonia, the first pediatric case of COVID-19 followed up with rhabdomyolysis, was evaluated. Guidelines for managing pediatric rhabdomyolysis currently do not exist, but our study aims to give clinicians a general approach to aid in history taking, physical examination, diagnosis, acute management, follow-up, and prevention.

## References

1. Stahl K, Rastelli E, Schoser B. A systematic review on the definition of rhabdomyolysis. J Neurol. 2020; 267(4):877-82.
2. Better OS, Stein JH. Early management of shock and prophylaxis of acute renal failure in traumatic rhabdomyolysis. N Engl J Med. 1990; 322:825.
3. Cervellin G, Comelli I, Benatti M, Sanchis-Gomar F, Bassi A, Lippi G. Non-traumatic rhabdomyolysis: background, laboratory features, and acute clinical management. Clin Biochem. 2017;50(12):656-62.
4. Brumback RA, Feeback DL, Leech RW: Rhabdomyolysis in childhood. Pediatr Clin North Am 1992;39:821-858.
5. Rennie LM, Hallam NF, Beattie TF. Benign acute childhood myositisin an accident and emergency setting. Emerg Med J. 2005;22:686-688.
6. Zafeiriou DI, Katzos G, Gombakis N, Kontopoulos EE, Tsantali C. Clinical features, laboratory findings and differential diagnosis of benign acute childhood myositis. Acta Paediatr. 2000;89:1493-1494.