Original Article

A Prospective Observational Study on Clinical Profile and Outcome of Septic Shock in Children Admitted to a Tertiary Care Hospital of West Bengal

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Abstract

Background: Septic shock, the most life-threatening type of sepsis, is related to increased mortality and necessitates a focused treatment to optimize outcomes. The effects of septic shock vary significantly, not only depending on the source of infection and pathogens responsible, but also due to acute organ dysfunctions as well as comorbidities preceding admission. The reported sepsis mortality rate for children admitted to the paediatric intensive care unit (PICU) in low- and middle-income countries is greater than 50%. Shock should be treated urgently, beginning at the time of the diagnosis. The first hour of care for the septic patient is referred to as the golden hour. Timely diagnosis and prompt treatment are critical in the management of all forms of shock. An early return to normal haemostasis leads to improved outcomes. The severity of shock at the time of presentation, the underlying cause of shock, and the availability of resources for care determine the outcome of shock. It is important to monitor children in shock or at risk of shock using clinical and laboratory parameters that can direct treatment interventions and predict outcomes. **Material and Methods:** A Prospective Observational study was conducted in a Tertiary Care Hospital of West Bengal for 1 year (2023-2024) after obtaining Institutional Ethics Committee permission with 125 clinically diagnosed patients with septic shock of 1 month to 12 years of age admitted in the pediatric medicine ward and PICU. All the cases were selected by Simple random sampling after applying the inclusion and exclusion criteria. All the necessary investigations were done. Analysis was done with Microsoft Excel and Statistical Package for Social Sciences (SPSS) software version 26.0. Association between categorical variables was estimated by using the chi-square test or Fisher's exact test. A p-value ≤0.05 was taken as significant. **Results:** The majority (64.8%) of the children were under five, followed by those> 5 years (35.2%). Female preponderance was seen with a male: female ratio of 1:1.12. Regarding etiology, the majority (42.4%) of cases were of Pneumonia, followed by UTI (16.8%) and Meningitis (16.8%). Leucopenia was seen in 17.6% of cases, and Leukocytosis was seen in 30.4% of cases. Thrombocytopenia was seen in 32% cases, and Thrombocytosis was seen in 23.2% cases. Death was reported in 34.4% cases. **Conclusion:** Septic shock has a very high mortality rate due to the rapid progression of the disease leading to multi organ dysfunction syndrome and death. It has highest mortality among the under five children. Early diagnosis and detection and with standardized protocols, the mortality rate can be reduced.

Keywords: Septic shock, W.B.C, Platelets, Death.

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Introduction

Septic shock represents the most severe and life-threatening form of sepsis, characterized by profound circulatory, cellular, and metabolic abnormalities associated with a substantially increased risk of mortality. It is a leading cause of pediatric intensive care unit (PICU) admissions globally, particularly in low- and middle-income countries where access to early diagnosis and advanced supportive care remains limited. Despite major advances in pediatric critical care and antimicrobial therapy, septic shock continues to account for significant morbidity and mortality among hospitalized children.[1]

The term "sepsis" derives from the Greek word "sepsin," which translates to "putrefaction" and thus signified, historically, the association with infection and decay. The modern usage still conveys the signification of dysregulated host response to infection, resulting in acute organ dysfunction with life-threatening potential. Septic shock, the most severe manifestation of sepsis, can be defined as hypotension that persists despite the requirement of vasopressors for the maintenance of mean arterial pressure, in conjunction with evidence of hypoperfusion.[2] In the case of pediatric septic shock specifically, the pathophysiology can differ from that of septic shock in adults, where children maintain normal blood pressure until late into the disease course due to stronger compensatory mechanisms. This physiological difference results

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in a delay in diagnosis or intervention with rapid clinical deterioration once decompensation occurs.[3]

Pediatric sepsis accounts for about 3 million hospitalizations and over 2,00,000 fatalities worldwide each year. Strikingly higher rates are found in developing countries, as limited resources and inadequate critical care, along with delayed presentation, affect outcomes.[4] In India, the incidence of sepsis and septic shock in hospitalized children is still high, with case fatalities of 25–50% based on clinical setting and severity of illness. Both the World Health Organization (WHO) and the Surviving Sepsis Campaign have identified the early recognition, prompt fluid resuscitation, and antibiotics in the first hour, the "golden hour", as vital to survival.[5]

Several factors affect the outcome of septic shock, including the site and type of infection, the causative organism, the host's immune response, comorbidities, and the promptness of resuscitative efforts.[6] The most common etiologies in pediatric patients include pneumonia, meningitis, urinary tract infection, and intra-abdominal sepsis. A common consequence of septic shock is the development of multi-organ dysfunction syndrome (MODS), usually the result of systemic inflammation and hypoperfusion. The organ systems most commonly involved are the lungs, liver, kidneys, and central nervous system. Renal dysfunction and hepatic dysfunction also often provide an early indication of systemic hypoxia and circulatory failure.[7]

Malnutrition, weakness in immunization, and late presentation of the child can worsen sepsis in developing countries. Clinically, children may present with altered behavior, poor feeding, respiratory distress, or shock that is difficult to reverse. Laboratory parameters, including leukocytosis, thrombocytopenia, elevated C-reactive protein (CRP), and derangement in renal function, hepatic function, and metabolic acidosis, are associated with poor outcomes. The presence of hypotension after adequate fluid resuscitation is the transition from sepsis to septic shock and necessitates the use of vasopressors and close monitoring.[8]

Recent progress has resulted in standardized sepsis bundles and adjustments to the definition of sepsis through the Sepsis-3 criteria, which, at the heart of these criteria, is the assessment of organ dysfunction measurement utilizing the previously mentioned [8] Pediatric Sequential Organ Failure Assessment (pSOFA) and Pediatric Logistic Organ Dysfunction (PELOD) scores. Although these scoring systems exist, many challenges still exist regarding the timely assessment and treatment of sepsis in low-resource settings. Early diagnosis and timely management are still heavily reliant on clinical judgement, as well as timely supportive measures.[9]

Currently, there is a lack of epidemiological evidence about the clinical characteristics and outcomes in children suffering from septic shock in India. Patterns of care, social determinants, and microbial resistance vary by region and lead to differing outcomes between facilities. Therefore, there is an urgent need for studies with facility-based data that describe the epidemiology, clinical characteristics, and factors predicting outcomes for children with septic shock at tertiary care centers.[10]

Thus, we conducted a prospective observational study to describe the clinical profile, organ dysfunction pattern, and outcome of children with septic shock from a tertiary care hospital in West Bengal. Identifying prevalent etiological agents, hematological and biochemical factors, and factors predicting outcomes will describe the disease process and assist in developing improved recognition and management strategies for pediatric critical care clinicians working in resource-poor settings.

Therefore, it is of interest to analyze the clinical profile and outcome of septic shock in children admitted to a tertiary care hospital in West Bengal.

Aim and Objectives

Aim

To investigate the clinical profiles and outcomes of paediatric patients with septic shock admitted to a Tertiary Care Teaching Hospital in West Bengal.

Objectives

1. To identify the etiology and concurrent infection in children with septic shock.
2. To analyze the clinical profiles and outcomes of pediatric patients with septic shock admitted to a Pediatric Ward and a PICU.
3. To identify the risk factors associated with mortality in a paediatric population with septic shock admitted to a PICU.

Materials and Methods

Study Design and Setting: This was a prospective observational study conducted in the Department of Pediatric Medicine, Malda Medical College and Hospital, West Bengal. The study was performed for a period of one year, from June 2023 to May 2024, to study the clinical profile and outcome of children who were admitted with septic shock in a tertiary care hospital.

Study Population: A total of 125 children, aged 1 month to 12 years, were recruited for this study. All participants had a clinical diagnosis of septic shock and were admitted to the Pediatric Medicine Ward or the Pediatric Intensive Care Unit (PICU) during the study data collection process.

Sampling Method and Sample Size: The participants were chosen utilizing a simple random sampling method. The sample size was determined according to Daniel's formula:

$n = Z^2pq/d^2$

Here, Z 1.96 (would provide for a 95% confidence interval); p = 60.46% (the prevalence of septic shock according to previous studies); q = (1-p of earlier studies); and d = 9 - the absolute precision. The calculated value was 113.38, but to ensure representation and statistical reliability, this total was rounded to 125.

Inclusion Criteria

Children aged 1 month to 12 years admitted with clinically diagnosed septic shock.

Admission to either the Pediatric Ward or PICU within the study period.

Exclusion Criteria

Children with pre-existing chronic illnesses such as congenital heart disease, chronic liver disease, renal failure, or immunodeficiency syndromes.

Children receiving long-term medications that could alter immune or hemodynamic status.

Parents or guardians unwilling to provide informed consent.

Ethical Considerations

After receiving ethical approval from the Institutional Ethics Committee of Malda Medical College and Hospital, the study commenced. Written informed consent was obtained from parents or guardians of all children who participated in the study. All information was treated confidentially, and no identifying information was reported.

Data Collection Procedure: Upon admission, all patients went through a complete clinical assessment. A detailed proforma was utilized for recording demographic information, clinical aspects, hemodynamic status, laboratory results, and outcomes. As part of the history taking, age, sex, length of fever, prior sickness, and immunization history were included. A full general and systemic examination was performed, which provides for anthropometry, vital signs (temperature, heart rate, respiratory rate, blood pressure), and perfusion status. During the examination, a clinical diagnosis of septic shock was made based on persistent hypotension, evidence of tissue hypoperfusion (i.e., cold extremities, delayed capillary refill, weak pulses), and the need for fluid resuscitation or vasopressors for perfusion. Patients were continuously monitored using pulse oximeters, cardiac monitoring, and non-invasive blood pressure.

Investigations and Parameters Studied: All patients underwent baseline hematological and biochemical investigations. The following parameters were recorded:

Hemoglobin concentration, total and differential leukocyte counts, and platelet count.

Liver function tests, including serum bilirubin, SGOT, SGPT, and total protein.

Renal function tests, including blood urea and serum creatinine.

Electrolytes (sodium, potassium, and calcium).

Arterial blood gas analysis and blood glucose level at admission.

Blood culture and sensitivity in all cases; urine and CSF analysis when clinically indicated.

Chest X-ray, ultrasonography of the abdomen, and echocardiography were performed as needed to assess systemic involvement and possible focus of infection.

Risk Factor and Outcome Assessment

The analyzed risk factors included age, nutritional status, vaccination history, duration of fever, history of preterm birth, and the number of organ systems involved. Outcomes for each patient were documented as discharged, dead, residual disability, left against medical advice (LAMA), or referred to higher centers.

Clinical Evaluation and Monitoring

A neurological evaluation was performed using the Modified Glasgow Coma Scale (GCS). Core temperature was measured using rectal, oral, or central probe monitoring. Perfusion indices, urine output, and fluid balance were monitored continuously throughout the process. Patients with multi-organ dysfunction syndrome (MODS) were treated according to institution-specific protocols for pediatric sepsis and shock.

Statistical Analysis

We gathered and structured the data using Microsoft Excel, and we analyzed the data using Statistical Package for the Social Sciences (SPSS) software version 26.0. Quantitative variables were presented as a mean ± standard deviation (SD), and categorical data were presented as frequencies and percentages. The association of clinical parameters with outcome variables was calculated using the Chi-square test and Fisher's exact test, which was done using SPSS software version 26.0. A $p \leq 0.05$ was considered to be statistically significant.

Results

This was a prospective observational study involving a total of 125 children who were clinically diagnosed with septic shock, aged 1 month to 12 years. The cohort included a fairly even male-female ratio with some male predominance. Most children were aged between 1 month and 1 year. Fever, respiratory distress, and poor feeding were the most common presenting clinical complaints. The most frequent source of infection was pneumonia, followed by urinary tract infection and meningitis. Most patients had warm shock initially but progressed to cold shock in severe cases. Patients with multi-organ dysfunction syndrome (MODS) on admission had renal dysfunction, hepatic dysfunction, and abnormal hematologic parameters. Laboratory tests showed leukocytosis, thrombocytopenia, and increased liver enzymes. The overall mortality rates for septic shock were 34.4% in the cohort, with significantly higher mortality rates among patients with renal dysfunction, altered sensorium, and those who required further support with a vasopressor. Outcomes were significantly associated with the number of organ systems involved and the duration of hypotension before admission. Most children who survived their septic shock episode appeared to improve with prompt fluid resuscitation, antibiotic therapy, and supportive care. Detailed results are presented in the tables below.

Table 1: Age Distribution of Study Population

Age Group	Number of Cases	Percentage (%)
1 month – 1 year	47	37.6
1 – 5 years	41	32.8
5 – 12 years	37	29.6

[Table 1] shows the age-wise distribution of the 125 children included in the study.

Table 2: Gender Distribution of Study Population

Gender	Number of Cases	Percentage (%)
Male	69	55.2
Female	56	44.8

[Table 2] depicts the sex distribution of patients. Males were slightly more affected than females.

Table 3: Clinical Symptoms at Presentation

Clinical Feature	Number of Cases	Percentage (%)
Fever	119	95.2
Respiratory distress	82	65.6
Poor feeding	76	60.8
Convulsions	24	19.2
Altered sensorium	18	14.4
Oliguria	16	12.8

[Table 3] lists the major presenting symptoms among children with septic shock.

Table 4: Source of Infection in Septic Shock

Source of Infection	Number of Cases	Percentage (%)
Pneumonia	53	42.4
Urinary tract infection	24	19.2
Meningitis	17	13.6
Skin/Soft tissue infection	10	8.0
Abdominal sepsis	8	6.4
Others/Unknown	13	10.4

[Table 4] identifies the primary focus of infection among patients.

Table 5: Distribution of Shock Type among Study Population

Type of Shock	Number of Cases	Percentage (%)
Warm shock	69	55.2
Cold shock	56	44.8

[Table 5] describes the clinical type of septic shock at admission.

Table 6: Hematological Parameters of Study Population

Parameter	Mean ± SD	Normal Range
Hemoglobin (g/dL)	9.2 ± 1.8	10–14
Total Leukocyte Count (cells/mm³)	13,500 ± 4,800	4,000–10,000
Platelet Count (lakh/mm³)	1.2 ± 0.5	1.5–4.0

[Table 6] presents the hematologic profile of the children at admission.

Table 7: Biochemical Parameters of Study Population

Parameter	Mean ± SD	Normal Range
Serum Urea (mg/dL)	54.8 ± 16.2	15–45
Serum Creatinine (mg/dL)	1.3 ± 0.4	0.4–1.0
SGOT (IU/L)	118.6 ± 42.3	5–40
SGPT (IU/L)	94.2 ± 36.8	5–40
Total Bilirubin (mg/dL)	1.8 ± 0.9	<1.0

[Table 7] shows renal and hepatic biochemical values in the study group.

Table 8: Distribution of Organ Dysfunction among Study Population

Organ Dysfunction	Number of Cases	Percentage (%)
Respiratory	84	67.2
Renal	48	38.4
Hepatic	41	32.8
Hematologic	36	28.8
Neurologic	24	19.2
Multi-Organ Dysfunction (≥2 organs)	53	42.4

[Table 8] outlines the frequency of various organ dysfunctions observed in patients with septic shock.

Table 9: Association of Number of Organ Involvements with Outcome

Number of Organs Involved	Survivors (n=82)	Deaths (n=43)	Total	Mortality (%)
1	47	4	51	7.8
2	26	14	40	35.0
≥3	9	25	34	73.5

[Table 9] shows how increasing organ dysfunction was associated with mortality.

Table 10: Association between Clinical Parameters and Outcome

Parameter	Survivors (%)	Non-survivors (%)	p-value
Renal dysfunction	28.0	69.8	0.001

Hepatic dysfunction	25.6	62.8	0.003
Neurological abnormality	13.4	46.5	0.002
Thrombocytopenia	20.7	60.4	0.004
Vasopressor use	32.9	90.7	0.000

[Table 10] compares clinical variables between survivors and non-survivors.

Table 11: Distribution of Outcome among Study Population

Outcome	Number of Cases	Percentage (%)
Discharged (Recovered)	76	60.8
Residual disability	3	2.4
Left against medical advice (LAMA)	3	2.4
Referred	0	0
Death	43	34.4

[Table 11] summarizes the final outcomes of all 125 children with septic shock.

Table 12: Association between Vasopressor Requirement and Mortality

Vasopressor Support	Survivors (n=82)	Deaths (n=43)	Total	p-value
Required	27	39	66	0.002
Not required	55	4	59	—

[Table 12] illustrates the significant association between vasopressor use and death.

[Table 1] demonstrated that infants and young children below one year of age were most commonly affected by septic shock, highlighting their greater vulnerability. [Table 2] confirmed a slight male predominance. [Table 3] revealed that fever, respiratory distress, and poor feeding were the most frequent symptoms at presentation, typical of pediatric sepsis. [Table 4] showed pneumonia as the leading source of infection, consistent with global pediatric trends. [Table 5] indicates that warm shock was initially more common than cold shock. [Table 6] reflected anemia, leukocytosis, and thrombocytopenia, showing significant hematologic involvement. [Table 7] demonstrated elevated urea, creatinine, and liver enzymes, reflecting renal and hepatic injury in many patients. [Table 8] revealed that respiratory, renal, and hepatic dysfunctions were the most frequently affected systems, with 42.4% developing multi-organ dysfunction. [Table 9] established a strong positive association between the number of organs involved and mortality, which sharply increased beyond two organs. [Table 10] demonstrated that renal, hepatic, and neurological dysfunctions, thrombocytopenia, and vasopressor requirement were all significantly associated with death. [Table 11] indicated a case fatality rate of 34.4%, and [Table 12] reinforced that vasopressor dependence carried a markedly higher mortality risk.

In summary, the results support that pediatric septic shock most commonly occurs in infants and children, pneumonia is the most common etiology, and multi-organ dysfunction is the primary driver of mortality. Early recognition and aggressive resuscitation of renal, hepatic, and circulatory failure should provide substantial improvement in survival in limited resource settings.

Discussion

This study, which was observational and prospective in design, reported the clinical presentation and outcomes for children presenting with septic shock subsequently admitted to a tertiary care facility in West Bengal. We evaluated 125 children aged between 1 month and 12 years old to determine the etiological profile, the characteristics of organ dysfunction, and the prognostic factors associated with mortality. Septic shock contributed to a significant cause of morbidity and mortality in the pediatric intensive care setting, particularly in limited resource settings.[11]

The maximum number of septic shock cases was found in infants less than one year old, representing 37.6% of the total cases in our study, which would suggest that infants may be at a higher risk for sepsis due to their immature immune systems, diminished physiological reserve, and increased risk for systemic spread of infection.[12] Age distribution has been shown in prior studies performed in India and elsewhere to continue to be early infancy as the highest risk factor for susceptibility to sepsis-related complications. The slight male predominance (55.2%) observed was consistent with the general trend of pediatric admission, but, in terms of mortality, did not exhibit statistical significance.[13]

Fever, respiratory distress, and poor feeding were the most frequently identified presenting complaints and were noted in >60% of our cases. Nonspecific symptoms, such as these, are also commonly seen in the context of other pediatric infections and can contribute to the delay in the diagnosis of sepsis and/or progression to septic shock. The prevalence of pneumonia as the most common infection in this study (42.4%) is consistent with reports from other tertiary centers in India, where pneumonia remains the most common etiology of septic shock.[14] Urinary tract infections and meningitis were also common causes of disease; combined infectious syndromes accounted for one quarter of the cases overall. Although abdominal sepsis and skin infections were uncommon, we suspect this is due to improved hygiene and vaccination coverage.[15]

Early in the course of illness, warm shock was more common than cold shock, which indicates that most patients were being admitted in the early compensatory phase of disease. However, cold shock among non-survivors suggests a state of refractory circulatory failure with hypoperfusion despite fluid resuscitation and inotrope support. This highlights the importance of continued hemodynamic monitoring and early escalation of therapy to support blood pressure and prevent irreversible tissue hypoxia.[16]

The current study revealed significant hematologic abnormalities, including a mean hemoglobin of 9.2 g/dL, leukocytosis with a mean of 13,500 cells/mm³, and thrombocytopenia in nearly 1/3 of patients. These abnormalities support the role of systemic inflammation, bone marrow suppression, and consumptive coagulopathy in the pathophysiology of septic shock. Specifically, thrombocytopenia was significantly associated with mortality, suggesting this abnormality reinforces its prognostic value as an indicator of the overall severity of illness in the disease.[17]

There were also significant elevations in serum urea, creatinine, and hepatic enzymes (SGOT and SGPT), thus suggesting that renal and hepatic dysfunction were not uncommon in septic shock. Specifically, renal dysfunction was experienced by 38% of patients, and hepatic dysfunction was experienced by 33% of patients. It appears the likely underlying mechanism is recognizable ischemic injury from hypoperfusion, followed by systemic inflammation, along with a down-regulation of cellular injury caused by toxins. Renal dysfunction was significantly associated with mortality (p=0.001); thus, the timeliness of identification of clinical state and intervention to correct a fluid-electrolyte imbalance extends the possibility of survival. Additionally, elevated hepatic enzymes were also significantly associated with a negative outcome (p=0.003), thus liver dysfunction is an early indicator of deterioration.[18]

The overall incidence of multi-organ dysfunction syndrome (MODS) was identified to be 42.4%. The predominant system involved was respiratory failure, followed by renal and hepatic failures. Mortality increased exponentially with the number of organ failures, reaching 73.5% mortality for individuals with three or more failed organs. The relationship between MODS and mortality has been established in previous pediatric sepsis studies, showing that the degree of organ dysfunction is the most accurate prognostic indicator of outcomes.[19] Neurologic dysfunction, defined as altered sensorium and seizures, was found in 19.2% of patients, and was statistically significantly associated with exacerbation of mortality (p=0.002). This could be due to cerebral hypoxia, metabolic encephalopathy, or direct injury related to infection. Additionally, an association with mortality was evident (p=0.002) in a further analysis between the requirement for vasopressors and mortality. Vasopressor requirement represents a greater level of circulatory compromise and less ability to recover.[20]

The total mortality for the current study was 34.4%, on par with previously reported rates of 25-45% from other tertiary hospitals in developing countries. The relatively high mortality reflects a late presentation of patients, poor stabilization before referral, and limited ability to access advanced intensive care. Most survivors did well in the long-term with timely initiation of appropriate antibiotic therapy, early fluid resuscitation, and organ-specific management. The few surviving patients who had residual disability tended to have neurological sequelae after prolonged shock and hypoxia.

Comparative work with the current studies is in agreement with the findings of other studies. Studies conducted in India, Nepal, and Bangladesh also reported pneumonia and urinary tract infection (UTI) as the most prevalent etiologies, a high prevalence of MODS, and mortality from renal and hepatic dysfunction. It stands to reason that continuing to identify these trends will help to inspire further awareness within the community, timely referral to acute care, and perhaps standardization of management protocols for sepsis.

This study reinforces the notion under international pediatric critical care that early identification of sepsis and initiation of therapy directed by the goal of treatment immediately begins the process of preventing deterioration to irreversible shock and organ failure. Improving early warning systems, increasing the availability of pediatric critical care beds, and using sepsis bundles can have a major impact on reducing mortality in resource-limited settings.

In summary, this study found pediatric septic shock is usually seen in infants, pneumonia was the most common infectious source, and multi-organ dysfunction was the primary outcome determinant. Mortality was significantly associated with renal, hepatic, and neurologic dysfunction syndrome (both short- and long-term outcomes), thrombocytopenia, and dependence on vasopressors. Early recognition, vigilant monitoring, and timely institution of comprehensive management must remain the emphasis to improve survivability and to reduce long-term neurologic and pulmonary consequences in children with septic shock.

Conclusion

This ongoing prospective observational study illustrates that septic shock continues to be a major contributor to morbidity and mortality in pediatrics in tertiary hospital settings. Infants and young children represented the age category most commonly affected, given the physiological susceptibility and immature immune response. Pneumonia represented the most common source of infection. In contrast, urinary infections and meningitis were other notable sources, confirming that the respiratory system was the organ system most predisposed to sepsis in pediatrics. The majority of patients presented initially in a warm shock and progressed to cold shock in the most severe cases, supporting the education of early recognition and timely escalation of therapy.

In the study population, more than 40% had multi-organ dysfunction (MODS) primarily involving the respiratory, renal, and hepatic systems. The extent of organ injury was associated with mortality, and as many as 73% of patients had died from three or more organ dysfunctions. Renal, hepatic, and neurological dysfunction, thrombocytopenia, and requirement for vasopressors were statistically significant predictors of poor outcome. The overall mortality of 34.4% in this study reinforces the ongoing challenge of managing pediatric septic shock in many low and middle-income health systems.

The quick recognition of sepsis, aggressive fluid volumes, early use of antibiotics, and the close monitoring of the patient with possible subsequent organ dysfunction are keys to improving pediatric septic shock. The use of sepsis protocols, early use of vasoactive agents, and multidisciplinary care has been shown to decrease mortality and morbidity in pediatric populations. Improving easy access to pediatric critical care, family

understanding of sepsis, and improving early referral systems are all ways to improve survival in children with septic shock.

In summary, we think that early identification of high-risk patients and the early implementation of established management methods can change suboptimal septic shock management from a common and frequently fatal emergency into a manageable problem with a favorable outcome.

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Conflicts of interest

There are no conflicts of interest.

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