MINH
MALAHAYATI INTERNATIONAL JOURNAL OF NURSING AND HEALTH SCIENCE
ISSN 2620-9152 (Print)
ISSN 2621-4083 (Online)
DOI: 10.33024
Nomor: 79/E/KPT/2023

ARTICLE INFORMATION
Received: April, 29, 2026
Revised: June, 26, 2026
Available online: June, 29, 2026
at : https://e-jurnal.iphorr.com/index.php/minh

Early nursing assessment of overt shock in encephalitis: A case report

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.ac.id

Abstract

Background: Encephalitis can quickly progress to a life-threatening, multisystem seizure, accompanied by septic shock, disseminated intravascular coagulation (DIC), and severe respiratory failure. In such conditions, early detection by nurses is essential to recognize clinical deterioration and support timely intervention.
Purpose: To analyze the contribution of early detection of nursing in recognizing overt shock in young adult patients with encephalitis who experience complications of septic shock and DIC.
Method: The study used a descriptive case report design on a 22-year-old male patient who was treated in the emergency unit and intensive care unit of a tertiary referral hospital in March–April 2026. Data were obtained retrospectively from medical records, nursing records, laboratory results, radiological examinations, blood gas analysis, and therapy documentation.
Results: Preliminary findings showed severe hemodynamic instability with blood pressure of 65/36 mmHg, pulse of 128 times/minute, respiratory rate of 29 times/minute, and lactate of 7.47 mmol/L. During treatment, progressive thrombocytopenia, coagulation disorders, decreased neurological status, and refractory hypoxemia were found. Mechanical ventilation and pronation position increased oxygen saturation from 84% to 98%, while lactate levels decreased to 2.26 mmol/L after intensive administration.
Conclusion: Continuous nursing monitoring plays a role in accelerating resuscitation, vasopressor administration, ventilation support, and multidisciplinary coordination. Early detection of nursing plays an important role in recognizing overt shock, monitoring multisystem deterioration, and improving clinical stabilization and patient safety.

Keywords: Disseminated Intravascular Coagulation; Early Detection of Nursing; Encephalitis; Overt Shock; Septic Shock.

INTRODUCTION

Encephalitis is an inflammation of the brain parenchyma that is associated with high mortality, neurological disability, and the need for intensive care. Major clinical manifestations include fever, changes in mental status, seizures, focal neurological deficits, and decreased consciousness. The main problem in the early phase is that symptoms are often non-specific, so diagnosis and intervention risk being made late (Alam, Easton, Nicholson, Irani, Davies, Solomon, & Michael, 2023). Globally, the burden of encephalitis is still significant, with an estimated 1,444,720 new cases and 89,900 deaths in 2019 (Wunrow, Bender, Vongpradith, Sirota, Swetschinski, Novotney, & Djalalinia, 2023). The data suggest that encephalitis is still a clinical problem with serious consequences.

In severe cases, encephalitis can develop into systemic disorders in the form of sepsis, septic shock, disseminated intravascular coagulation (DIC), and Acute Respiratory Distress Syndrome (ARDS). Sepsis is defined as a life-threatening organ dysfunction due to an irregular host response to

DOI: https://doi.org/10.33024/minh.v9i4.3111

infection, while septic shock is characterized by circulatory and metabolic disorders with higher mortality (Evans, Rhodes, Alhazzani, Antonelli, Coopersmith, French, Machado, Mcintyre, Ostermann, Prescott, Schorr, & Levy, 2021). DIC in sepsis is characterized by systemic coagulation activation, microthrombosis, platelet consumption, and an increased risk of bleeding (Iba, Levy, Raj, & Warkentin, 2019). Sepsis is also a major predisposing factor of ARDS through alveolo-capillary damage and refractory hypoxemia (Ware, Koyama, Zhao, Janz, Wickersham, Bernard, & Matthay, 2013). Such complexity demands rapid clinical detection and multidisciplinary responses.

Previous research has identified encephalitis, sepsis, disseminated intravascular coagulation (DIC), and acute respiratory distress syndrome (ARDS) as significant and persistent clinical challenges from a medical perspective. The diagnosis and management of encephalitis are essential for improving outcomes in patients with acute neurological disorders (Alam et al., 2023). Early resuscitation in patients with sepsis and septic shock is a key strategy recommended to reduce mortality and improve patient prognosis (Evans et al., 2021). Furthermore, understanding the pathophysiology and management of sepsis-associated DIC is crucial for preventing severe coagulation-related complications (Iba et al., 2019). Biomarkers and diagnostic approaches for ARDS also play an important role in the early identification and management of respiratory dysfunction in patients with sepsis (Ware et al., 2013). From a nursing perspective, comprehensive patient assessment is essential for detecting clinical deterioration; however, evidence-based and comprehensive nursing assessment frameworks for inpatient settings remain limited (Wiseman, Kourouche, Jones, Kennedy, & Curtis, 2024).

However, the literature that integrates complications of encephalitis with septic shock and DIC in the framework of early nursing studies is limited. Most studies focus on disease diagnosis, pharmacological therapy, or medical outcomes, rather than on the initial identification process by nurses. This gap is important because overt shock can occur when tissue perfusion has decreased even though some clinical parameters appear to be stable. Delays in the recognition of these conditions have the potential to increase the risk of organ failure and mortality.

The scientific update of this article lies in the analysis of early nursing studies as a clinical instrument for detecting overt shock in young adult patients with encephalitis that progresses to septic shock and disseminated intravascular coagulation, through the integration of hemodynamic, neurological, laboratory, and respiratory data. This article places nurse clinical reasoning as a key component in the escalation of critical patient handling. The problem of this study is what is the role of early nursing assessment in detecting overt shock in encephalitis patients with complications of septic shock and DIC? The purpose of this article is to analyze the contribution of early nursing assessments in quickly recognizing clinical exacerbations and supporting timely interventions to improve safety and critical patient outcomes.

RESEARCH METHOD

This study used a descriptive-analytical case report design for one young adult patient with a diagnosis of encephalitis accompanied by overt shock, septic shock, and disseminated intravascular coagulation (DIC). This design is used to analyze clinical trials, nursing assessment results, interventions, and patient responses in depth. The research was conducted in the emergency department and intensive care unit (ICU) of tertiary referral hospitals in Bandung in the period March-April 2026. The subject of the study was one 22-year-old male patient who was selected purposively based on the complexity of the case, completeness of clinical data, and relevance to the research objectives.

The data source used secondary data derived from medical records, nursing records, serial laboratory results, blood gas analysis, radiology, and patient therapy documentation. The main instruments of the service include a multiparameter patient monitor, sphygmomanometer (Omron), pulse oximeter, mechanical ventilator, and hospital laboratory examination. The variables studied included hemodynamic status (blood pressure, pulse, MAP), respiratory status (RR, SpO_2, ventilation), neurological status (GCS), coagulation status (platelets, PT, aPTT, D-dimer), lactate levels, and response to medical and nursing interventions.

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

Data collection was carried out through a retrospective review of medical records using a chronological approach from the patient's admission to the emergency room to ICU treatment. Data analysis was carried out in a descriptive-analytical manner by compiling a clinical timeline, interpreting changes in patient conditions, and comparing findings with the latest literature and guidelines. The confidentiality of the patient's identity is maintained through the anonymization of all personal data and the use of information only for scientific purposes.

This study was conducted in full compliance with the ethical principles outlined in the Declaration of Helsinki. All patient-identifying information was anonymised prior to data extraction, and no personal data are disclosed in this report. Clinical data were used exclusively for scientific and educational purposes. As this was a retrospective analysis of existing medical records involving no direct patient intervention, formal ethics committee approval was not required under applicable institutional regulations; however, institutional authorisation for medical record access was obtained prior to data collection. Informed consent for the use of clinical data for scientific publication was obtained in accordance with institutional policy.

RESEARCH RESULTS

Table 1. Vital Signs and Key Clinical Parameters on Emergency Unit Arrival

Parameter	Value on Arrival
Age / Sex	22 years / Male
Level of Consciousness	Compos mentis (GCS 15)
Blood Pressure	65/36 mmHg (MAP ~46 mmHg)
Heart Rate	128 bpm (tachycardia)
Respiratory Rate	29 breaths/min (tachypnoea)
SpO_2 (room air)	98%
Temperature	38.2°C (febrile)
Key Physical Finding	Generalised petechial rash

A 22-year-old male patient presented to the Emergency Unit on 28 March 2026 at 18:25 with a chief complaint of high-grade fever, generalised myalgia, progressive weakness, and a widespread petechial rash. On initial assessment, the patient was fully conscious (compos mentis); however, haemodynamic evaluation immediately revealed signs consistent with overt shock. Blood pressure was critically low at 65/36 mmHg, corresponding to a mean arterial pressure (MAP) of approximately 46 mmHg well below the 65 mmHg threshold required for adequate organ perfusion. Heart rate was 128 beats per minute, indicating compensatory tachycardia in response to diminished stroke volume, and respiratory rate was 29 breaths per minute, suggesting early respiratory compensation for metabolic acidosis.

Despite an oxygen saturation of 98% on room air a finding that may have created a false sense of haemodynamic adequacy the combination of severe hypotension, tachycardia, and tachypnoea clearly indicated a state of circulatory failure. The presence of a generalised petechial rash on arrival was a pivotal clinical finding, raising immediate suspicion of a systemic coagulopathy consistent with early disseminated intravascular coagulation (DIC). These findings collectively indicated that the patient had already entered a state of overt shock at the time of initial contact, despite a preserved level of consciousness.

Table 2. Early Intervention in the ER

Intervention	Remarks
Crystalloid liquid	NaCl 0.9% 2 liters
Early antibiotics	Piperacillin/Tazobactam
Advanced antibiotics	Cefepime, Vancomycin
Vasopressor	Norepinephrine
Monitoring	Foley catheter, CVC

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

Recognition of overt shock prompted the immediate initiation of resuscitative measures. Intravenous fluid resuscitation was commenced with 2 litres of isotonic crystalloid (0.9% sodium chloride) to address suspected intravascular volume depletion. Given the severity of hypotension and the clinical presentation consistent with septic shock of infectious aetiology, empirical broad-spectrum antibiotic therapy was initiated without delay, comprising piperacillin-tazobactam as first-line coverage, subsequently escalated to cefepime and vancomycin to extend coverage against resistant Gram-positive and Gram-negative organisms.

Vasopressor therapy with norepinephrine was introduced promptly due to refractory hypotension that persisted despite fluid resuscitation, with the therapeutic target of achieving and maintaining a MAP ≥65 mmHg. A urinary catheter was inserted to enable continuous urine output monitoring as a surrogate marker of renal perfusion and overall haemodynamic response, and a central venous catheter (CVC) was placed to facilitate vasopressor infusion and central venous pressure monitoring. Following initial resuscitation, blood pressure improved to 90/62 mmHg with a MAP of 70 mmHg, demonstrating a partial but clinically meaningful haemodynamic response, sufficient to permit transfer to the intensive care unit (ICU) for further monitoring and management.

Table 3. Clinical Parameters at ICU Admission

Parameter	Value at ICU Admission
GCS	13/15 (confused)
Blood Pressure	90/62 mmHg
MAP	70 mmHg
Heart Rate	125 bpm
Respiratory Rate	36 breaths/min
SpO_2	99% on O_2 7 L/min

Upon ICU admission, the patient exhibited evidence of clinical deterioration across multiple organ systems. A notable decline in neurological status was observed, with the GCS falling from 15 (compos mentis) on Emergency Unit arrival to 13/15 (confused) at the time of ICU transfer — a change that occurred within a short interval and indicated progressive cerebral dysfunction attributable to a combination of central nervous system infection, cerebral hypoperfusion, and systemic inflammatory response. Haemodynamically, while blood pressure had partially improved to 90/62 mmHg (MAP 70 mmHg) with vasopressor support, ongoing tachycardia at 125 beats per minute reflected continued haemodynamic stress and inadequate compensation. Respiratorily, the patient demonstrated a marked escalation in work of breathing, with a respiratory rate of 36 breaths per minute and oxygen requirements of 7 L/min via nasal cannula to maintain an SpO_2 of 99%. These findings collectively indicated progressive multisystem involvement, with simultaneous neurological, haemodynamic, and respiratory compromise that necessitated intensive-level care and anticipated the need for mechanical ventilatory support.

Table 4. Summary of Key Laboratory Results and Clinical Significance

Parameter	Result	Clinical Significance
pH	7.246	Metabolic acidosis
HCO_3^-	17.8 mmol/L	Reduced (acidosis)
Base Excess	−9	Severe deficit
Lactate (initial)	7.47 mmol/L	Critical hyperlactatemia
Lactate (post-resus.)	2.26 mmol/L	Significant improvement
WBC	24.27–26.90 ×10³/µL	Leukocytosis (sepsis)
Platelets (initial → nadir)	39 → 22 ×10³/µL	Severe thrombocytopenia
PTT	101.8 seconds	Prolonged (DIC)
Creatinine	252 µmol/L	Acute kidney injury

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

Laboratory investigations performed at and shortly after admission revealed a constellation of severe abnormalities consistent with septic shock, systemic hypoperfusion, and consumptive coagulopathy. Arterial blood gas analysis demonstrated a pH of 7.246, HCO_3^- of 17.8 mmol/L, and a base excess of −9, indicating uncompensated metabolic acidosis resulting from anaerobic cellular metabolism in the setting of circulatory failure. These findings were closely corroborated by a serum lactate level of 7.47 mmol/L — nearly double the threshold of 4.0 mmol/L associated with high sepsis-related mortality — confirming critical systemic hypoperfusion that was not clinically apparent from oxygen saturation alone. This is a key finding that underscores the risk of relying on SpO_2 as a sole perfusion marker in early shock states.

The haematological profile was equally alarming. Peripheral leukocytosis (24.27–26.90 ×10³/μL) confirmed an intense systemic inflammatory response. Of particular clinical significance was the progressive decline in platelet count from 39 ×10³/μL at admission to a nadir of 22 ×10³/μL during ICU treatment, occurring in conjunction with a markedly prolonged partial thromboplastin time (PTT) of 101.8 seconds. These coagulation parameters, combined with the generalised petechial rash observed on physical examination, strongly indicated the presence of DIC characterised by simultaneous systemic coagulation activation, consumptive thrombocytopenia, and an elevated risk of haemorrhage. Additionally, a serum creatinine of 252 μmol/L confirmed the presence of acute kidney injury (AKI), representing a further dimension of multiorgan dysfunction consistent with septic shock physiology. Following intensive resuscitation, repeat lactate measurement demonstrated a significant reduction to 2.26 mmol/L, indicating restored tissue perfusion and a positive response to therapeutic intervention.

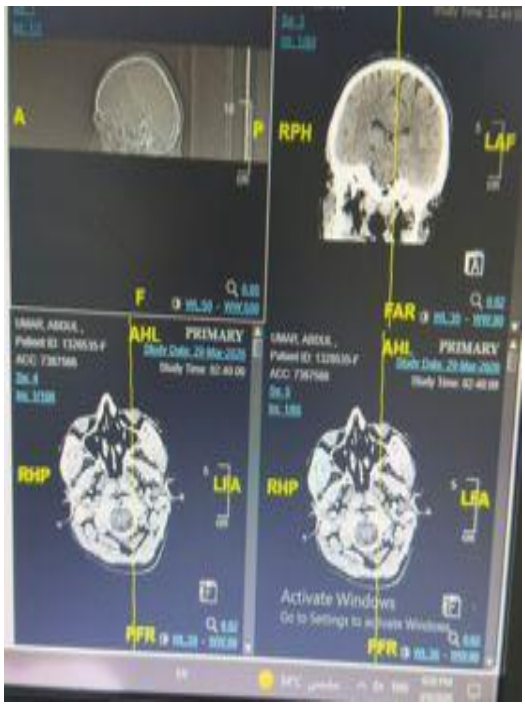


Figure 1. Contrast Head CT Scan (March 29, 2026)



Figure 2. Portable AP Thorax X-ray

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

Table 5. Head MRI Results with Contrast (April 1, 2026)

Evaluation Components	Findings
Examination Indications	Suspicion of central nervous system infection (meningitis/encephalitis) and worsening of the patient's clinical condition
Key Findings	T2 hyperintensity in the left hippocampus accompanied by restricted diffusion
Post-Contrast Enhancement	No abnormal enhancement found
Radiological Interpretation	Suggestive of herpes encephalitis or possible temporal mesial sclerosis
Other Brain Parenchyma	Within normal limits, no significant abnormalities were found
Posterior Pit	There are no abnormalities
Ventricular System	Within normal limits
Mass Effect	None
Midline Shift	None
Intra/Extra-Axial Fluid Collection	None
Extra-cranial findings	Fluid signals in the left maxillary sinuses, posterior ethmoid air cells, and bilateral mastoid air cells
Interpretation of Extra-cranial Findings	Leads to an inflammatory process of infection in the form of rhinosinusitis and mastoiditis
Clinical Meaning	Supports the diagnosis of central nervous system infections, especially viral encephalitis with left hippocampus involvement

Figure 1. showed no acute intracranial hemorrhage, mass effect, or midline shift. Figure 2. Portable AP Thorax X-ray shows diffuse bilateral infiltrates as a picture of non-cardiogenic pulmonary edema as well as the position of the medical device. CT of the Spiral Thorax shows consolidation of the right lower lobe, diffuse ground glass opacity, and a picture of bronchopneumonia. Table 5 is the results of a head MRI with contrast showing hyperintensity of the left hippocampus area with diffusion restriction that favors the encephalitis process.

Neuroimaging was performed to evaluate the aetiology and extent of central nervous system involvement. A contrast-enhanced computed tomography (CT) scan of the head obtained on 29 March 2026 demonstrated no evidence of acute intracranial haemorrhage, space-occupying lesion, or midline shift, effectively ruling out acute structural complications such as cerebral herniation or haemorrhagic stroke. However, the clinical significance of normal CT findings in this context is important to recognise: early viral encephalitis is frequently inapparent on CT, and the absence of haemorrhage does not exclude parenchymal inflammation.

A contrast-enhanced brain MRI performed on 1 April 2026 provided the definitive neuroimaging diagnosis. T2-weighted sequences revealed hyperintensity in the left hippocampus accompanied by restricted diffusion on diffusion-weighted imaging (DWI), with no abnormal post-contrast enhancement. These findings are highly suggestive of viral encephalitis, particularly Herpes Simplex Virus (HSV) encephalitis, which characteristically involves the medial temporal and limbic structures. The MRI also demonstrated fluid signal in the left maxillary sinuses, posterior ethmoid air cells, and bilateral mastoid air cells, consistent with concurrent rhinosinusitis and mastoiditis, suggesting a possible infectious source contributing to or propagating the systemic inflammatory response.

Pulmonary imaging provided critical insight into respiratory compromise. A portable anteroposterior chest radiograph demonstrated diffuse bilateral pulmonary infiltrates, consistent with non-cardiogenic pulmonary oedema in the clinical context of sepsis-associated acute respiratory distress syndrome (ARDS). Spiral thoracic CT further characterised the pulmonary pathology, revealing right lower lobe consolidation, diffuse ground-glass opacity, and a bronchopneumonia pattern — together indicating extensive alveolar involvement that explained the severity of gas exchange impairment.

Electrocardiographic (ECG) evaluation revealed an abnormal pattern, including ST-segment changes consistent with acute inferior infarction and a lateral injury pattern, rightward axis deviation, and poor R-wave progression in the precordial leads. In the

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

context of a 22-year-old patient presenting with septic shock and DIC, these findings are most appropriately interpreted as Type 2 Myocardial Infarction secondary to myocardial oxygen supply-demand mismatch, rather than primary atherothrombotic coronary occlusion. The contribution of microvascular thrombosis from DIC, cytokine-mediated septic cardiomyopathy, and severe hypoxemia-induced myocardial ischaemia most likely explains these ECG abnormalities. Consistent with this interpretation, the ECG changes were treated as a systemic complication rather than as isolated coronary disease, with serial monitoring continued throughout the ICU admission.

Therapeutic Interventions and Clinical Response

As respiratory status continued to deteriorate despite supplemental oxygen therapy, endotracheal intubation was performed and the patient was placed on invasive mechanical ventilation. Despite ventilator optimisation including a fraction of inspired oxygen (FiO_2) of 100% with elevated positive end-expiratory pressure (PEEP), persistent hypoxemia was observed, with SpO_2 declining to 83–84%. This pattern of refractory hypoxemia, in conjunction with bilateral radiological infiltrates, was consistent with severe ARDS and indicated the need for advanced oxygenation strategies beyond conventional ventilator management.

Prone positioning was subsequently implemented as a rescue strategy for refractory hypoxemia. The haemodynamic and oxygenation response was clinically striking: within one hour of initiation, SpO_2 improved from 84% to 98%, representing a 14-percentage-point recovery without alteration in FiO_2 (Table 6). This rapid and substantial improvement suggests the presence of recruitable lung tissue in the posterior lung regions — consistent with positional atelectasis that is reversible through redistribution of ventilation achieved by prone positioning. Haemodynamic status also demonstrated gradual improvement following the improvement in oxygenation, likely reflecting the reduction in hypoxia-driven sympathetic activation and pulmonary vasoconstriction. Prone positioning was subsequently incorporated as a regular component of the respiratory management protocol.

Concurrently, haematological support was provided in the form of platelet transfusions and fresh frozen plasma (FFP) to address the consumptive coagulopathy associated with DIC. Norepinephrine infusion was continued and titrated throughout the ICU course as a vasopressor to maintain adequate MAP. Enteral nutrition was initiated during the subsequent phase of treatment, reflecting improved gastrointestinal tolerance and overall clinical stabilisation.

Table 6. Response After Pronation

Parameters	Before Pronation	After Pronation
SpO_2	84%	98%
FiO_2	100%	100%
Hemodynamics	Unstable	Gradually improving

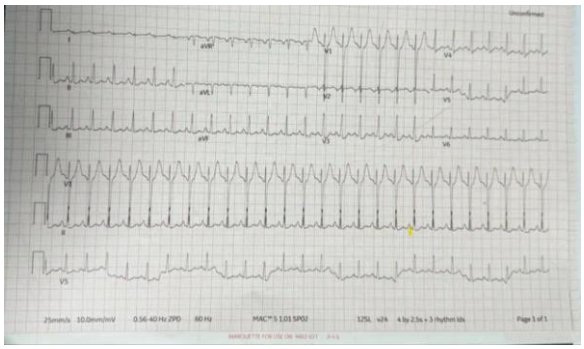


Figure 3. Advanced ECG recordings that note the axis to the right and poor R-wave progression

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

Table 7. Interpretation of Electrocardiography (ECG) Results

ECG Parameters	Findings	Clinical Interpretation
Rhythm and Axis	Rightward axis	Exhibits axial deviation to the right that may be associated with increased right cardiac load, pulmonary disorders, or acute hemodynamic changes.
R Wave	Poor R-wave progression	May lead to the possibility of a long-standing septal infarction, conduction disorders, cardiac rotation, or normal variations.
ST Segment	STEMI (Acute MI), lateral injury pattern, inferior infarction	Shows a picture of acute myocardial injury. In young patients with septic shock and DIC, these findings are more likely to lead to Type 2 Myocardial Infarction due to myocardial oxygen supply imbalance or complications of microthrombosis, rather than primary coronary occlusion.
General Conclusion	Abnormal ECG	Indicates the presence of cardiovascular involvement during critical phases and requires serial monitoring.

In the following days the patient showed gradual improvement in the form of increased oxygenation, decreased vasopressor requirements, initiation of enteral nutrition, and stabilization of clinical parameters. Routine pronation is continued as part of the respiratory management.

DISCUSSION

Hemodynamic Monitoring

The results showed that when the patient arrived at the Emergency Unit, blood pressure was found to be 65/36 mmHg, pulse frequency 128 times/minute, breathing rate 29 times/minute, temperature 38.2°C, with oxygen saturation of 98% in the room air. The combination of severe hypotension and tachycardia indicates the presence of hemodynamic instability that leads to a state of shock, even though oxygen saturation is still within normal limits From a critical nursing perspective, hemodynamic monitoring is a key component for early detection of patient deterioration. Hemodynamics reflects the ability of the cardiovascular system to maintain organ perfusion through a balance of cardiac output, systemic vascular resistance, and circulatory volume. A decrease in blood pressure accompanied by an increase in pulse frequency in these patients indicates a compensatory response of the body to a decrease in tissue perfusion. Tachycardia in the early phase of shock occurs as a compensatory mechanism to maintain cardiac output when stroke volume decreases (Urden, Stacy, & Lough, 2022).

A blood pressure value of 65/36 mmHg indicates mean arterial pressure (MAP) which is below the organ perfusion target. In intensive nursing practice, a MAP of at least ≥65 mmHg is used as an indicator of systemic perfusion adequacy in septic shock patients. Evans et al., (2021) affirm that maintaining a MAP of ≥65 mmHg is important to prevent advanced organ dysfunction in sepsis and septic shock. Therefore, the results of blood pressure monitoring in the initial phase are the basis for fluid resuscitation and vasopressor administration (Evans et al., 2021).

The study's findings also showed that after initial resuscitation and norepinephrine support, blood pressure increased to 90/62 mmHg with a MAP of 70 mmHg before the patient was transferred to the ICU. These changes indicate a positive response to the initial hemodynamic intervention. In the nursing process, the data is part of the evaluation stage, which is assessing the effectiveness of the actions that have been given based on the patient's objective parameters.

From a nursing perspective, hemodynamic monitoring in this case is not only limited to recording blood pressure numbers, but also includes observations of peripheral perfusion, skin color, extremity temperature, level of consciousness, urine production, and pulse trends. A comprehensive patient assessments are more effective at detecting deterioration than using a single parameter (Wiseman et al., 2024). This is relevant in this patient because oxygen saturation is still normal, but signs of circulation have indicated emergency.

When compared to other studies, sepsis patients with severe hypotension who received early identification and early intervention had better

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

outcomes than patients with delayed resuscitation. Seymour et al. (2017) reported that delayed therapy in septic shock correlated with increased hospital mortality (Seymour, Gesten, Prescott, Friedrich, Iwashyna, Phillips, & Levy, 2017). The findings support the results of this study that early hemodynamic monitoring plays an important role in accelerating clinical decision-making.

The results of this study mean that the role of nursing in early hemodynamic monitoring is very important to detect overt shock quickly, guide therapeutic escalation, and prevent further organ deterioration. In encephalitis patients with complications of septic shock and DIC, early identification of hypotension and tachycardia is the main entrance to patient safety.

Tissue Perfusion

The results showed that the patient experienced tissue perfusion disorders characterized by lactic levels of 7.47 mmol/L, pH 7.246, HCO_3^- 17.8 mmol/L, and base excess -9 at the initial examination. The data showed the presence of hyperlactatemia accompanied by metabolic acidosis consistent with systemic hypoperfusion in the shock condition

In a critical nursing perspective, tissue perfusion describes the adequacy of blood flow and oxygen to the cellular level. When perfusion decreases, cells are unable to maintain aerobic metabolism so there is an increase in lactate production through anaerobic pathways. High lactate levels in these patients indicate that circulatory disorders have had an impact on tissue metabolism, although peripheral oxygen saturation upon arrival is still recorded as normal. This condition confirms that normal SpO_2 does not necessarily reflect adequate tissue perfusion.

According to the Surviving Sepsis Campaign, lactate levels are an important indicator in assessing the severity of sepsis and septic shock, and are used as markers of occult hypoperfusion (Evans et al., 2021). Patients with lactate >4 mmol/L have a higher risk of mortality and require aggressive resuscitation. Therefore, the lactate level of 7.47 mmol/L in this case indicates a critical state that requires immediate intervention.

In addition to lactate, a pH value of 7.246 and an HCO_3^- of 17.8 mmol/L indicate metabolic acidosis. In the shock condition, acidosis occurs due to lactic acid accumulation and failure of renal perfusion in regulating acid-base balance. Previous research explained that changes in blood gas analysis in shock patients are an important indicator of the progression of circulatory failure and must be monitored serially by ICU nurses (Urden et al., 2022).

After fluid resuscitation, vasopressors, and intensive care, the patient's lactate levels decreased to 2.26 mmol/L. This decrease showed improvement in tissue perfusion and good therapeutic response. In nursing, the trend of declining lactate is more meaningful than a single examination result because it reflects the success of the intervention dynamically.

Monitoring of tissue perfusion by nurses is not only carried out through laboratory results, but also through clinical observations such as level of consciousness, extremity temperature, skin tone, capillary refill time, urine production, and changes in mental status. In this case, the presence of confusion during ICU admission and hemodynamic instability strengthen the indication of vital organ perfusion disorder

Other research suggests that delays in recognizing tissue hypoperfusion increase the risk of acute kidney failure, neurological disorders, and mortality in sepsis patients. The integration of clinical parameters and serial lactate was more accurate in assessing the success of resuscitation than blood pressure alone (Hernández, Ospina-Tascón, Damiani, Estenssoro, Dubin, Hurtado, Friedman, Castro, Alegría, Teboul, Cecconi, & Bakker, 2019). The findings are in line with this case, where improvement in blood pressure must be followed by lactate improvement to ensure effective perfusion.

The results of this study show that the role of nursing in recognizing tissue perfusion disorders is very important through simultaneous interpretation of clinical and laboratory data. In patients with encephalitis with septic shock and DIC, early detection of hypoperfusion is the main basis for accelerating therapy and prevention of multiorgan failure.

Risk of Bleeding

The findings of the study showed a marked hemostasis disorder from the initial phase of treatment. The patient came with a generalisata petekie rash, accompanied by a decrease in platelets from 39 $\times 10^3/\mu L$ to 22 $\times 10^3/\mu L$, as well as a PTT value of 101.8 seconds which then extended at the next

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

evaluation. The combination of clinical manifestations and laboratory parameters indicates a high risk of bleeding associated with disseminated intravascular coagulation (DIC).

In critical patients, petekie is an important peripheral sign because it is often an early indicator of systemic coagulation disorders. The appearance of bleeding points on the skin indicates capillary fragility and the inability of the clotting system to maintain vascular integrity. In this case, petekie does not stand alone, but occurs simultaneously with severe thrombocytopenia and prolonged coagulation time, thus corroborating the presence of consumptive coagulopathy.

Pathophysiologically, sepsis triggers the release of proinflammatory cytokines that activate the coagulation pathway extensively. Excessive thrombin activation results in the formation of microthrombus in the microcirculation, while platelets and coagulation factors are progressively consumed. The condition causes two simultaneous consequences, namely microvascular thrombosis and a tendency to bleed (Iba et al., 2019). This explains why patients with DIC may show signs of organ ischemia as well as spontaneous bleeding.

Platelet values that continue to decrease from 39 to 22 $\times 10^3/\mu L$ indicate an ongoing consumption process. In intensive nursing practice, the trend of platelet decline is more meaningful than a single value because it reflects disease progression. Patients with platelets of $<50 \times 10^3/\mu L$ have a higher risk of bleeding, especially when accompanied by invasive procedures such as central venous catheter insertion, intubation, or repeated suction.

Interventions given in this case include platelet transfusions and fresh frozen plasma (FFP) during ICU treatment. The administration of these blood components shows that the coagulation disorder has required active correction. From a nursing point of view, this condition demands strict monitoring of signs of mucosal bleeding, hematuria, gastrointestinal bleeding, hematoma in the pelvic area, as well as sudden hemodynamic changes that can lead to internal bleeding.

In addition to clinical observation, nurses have an important role in injury prevention. The use of atraumatic techniques during the procedure, unnecessary restriction of punctures, securing the intravenous route, and evaluation of suction needs are part of efforts to reduce the risk of bleeding. Previous research emphasized that the prevention of minor trauma in thrombocytopenia patients is a basic patient safety strategy (Potter, Perry, Stockert, & Hall, 2021).

When compared with reports of other sepsis patients, progressive thrombocytopenia is often correlated with higher mortality and longer ICU stay times. Previous research reported that persistent platelet decline in sepsis is an indicator of poor prognosis because it reflects inflammation and continuous coagulation consumption. In these cases, quick identification of the risk of bleeding allows corrective action to be taken earlier (Levi & Scully, 2018).

Gas Exchange

The patient's clinical journey showed a deterioration in respiratory function after ICU admission. When transferred to the intensive care unit, the respiratory rate was recorded 36 times/minute with an oxygen requirement of 7 L/min to maintain 99% saturation. Shortly afterwards, the patient experienced a progressive decline in respiratory status so that intubation and mechanical ventilation were performed. In the next phase, oxygen saturation had dropped to 83–84% even though it had been ventilated with 100% FiO_2. These findings indicate a severe gas exchange disruption.

An increase in the frequency of breathing from the beginning is an indicator of the body's compensation against hypoxemia and metabolic acidosis. Tachypnea in sepsis patients often appears earlier than decreased oxygen saturation, as the body tries to increase carbon dioxide elimination and improve alveolar oxygenation. Therefore, an increase in RR is an important parameter that must be responded to quickly by nurses, especially when accompanied by an increase in oxygen needs.

When the patient continues to experience hypoxemia even though the FiO_2 is maximum, it indicates an oxygen diffusion disorder that can no longer be treated with regular oxygen supplementation. In this case, the thoracic photograph showed a diffuse bilateral infiltrate, while the CT thorax showed ground glass opacity, consolidation of the right lower lobe, and a picture of bronchopneumonia. The combination of clinical and

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

radiological data supports the occurrence of acute lung injury that interferes with gas exchange.

Physiologically, sepsis causes an increase in the permeability of the alveolo-capillary membrane so that fluid and inflammatory mediators enter the alveolus space. This condition decreases the surface area of oxygen exchange, causes alveoli collapse, and creates a ventilation-perfusion mismatch. This process is the main mechanism for the occurrence of ARDS in critical patients (Matthay, Zemans, Zimmerman, Arabi, Beitler, Mercat, Herridge, Randolph, & Calfee, 2019).

In nursing, the main problem is not only low saturation, but increased respiratory workload and failure to maintain adequate oxygenation. Therefore, respiration monitoring should include breathing rate, breathing patterns, use of the respiratory support muscles, pulmonary auscultation, SpO_2 trends, synchronization with ventilators, as well as response to changes in device settings. In these patients, the need for intubation indicates that spontaneous compensation is no longer sufficient.

During the use of ventilators, nurses also play a role in maintaining airway patency through suction as indicated, ensuring the position of the endotracheal tube, monitoring cuff pressure, preventing ventilator-associated pneumonia, and evaluating the patient's tolerance to mechanical ventilation. This intervention is important because the success of ventilation is determined not only by the machine, but also by the quality of daily monitoring.

Other studies have shown that sepsis patients with persistent hypoxemia have higher mortality than patients whose oxygenation improves rapidly. Delays in the initiation of ARDS delayed the implementation of protective ventilation strategies and worsened clinical outcomes (Bellani, Laffey, Pham, Fan, Brochard, Esteban, Gattinoni, van Haren, Larsson, McAuley, Ranieri, Rubenfeld, Thompson, Wrigge, Slutsky, & Pesenti, 2016). The findings are relevant to this case, where a rapid decline in saturation requires immediate escalation.

Pronasi Response

Although the patient has been provided with mechanical ventilation with 100% FiO_2 and adjustment of ventilator parameters, oxygenation remains inadequate. Oxygen saturation was recorded to decrease by up to 84%, indicating hypoxemia refractory to conventional therapy. Based on these conditions, the treatment team intervened in the pronation position. After one hour of pronation, oxygen saturation increased to 98% with hemodynamic conditions gradually improving. This data shows a rapid positive clinical response to the action.

Improved oxygenation after pronation indicates that the patient's main disorder is not solely a lack of oxygen supply, but an uneven distribution of pulmonary ventilation. In the supination position, the posterior area of the lungs that are more perfusiph often collapses or compresses due to the weight of the heart, mediastinum, and intraabdominal pressure. As a result, more blood flows to the poorly ventilated areas of the lungs, resulting in an intrapulmonary shunt. When the patient is positioned on his stomach, the distribution of ventilation becomes more homogeneous and the recruitment of the posterior alveoli increases.

The pronation position in severe ARDS can increase oxygenation, reduce lung injury due to ventilators, and reduce mortality if done appropriately and for a long time (Guérin, Reignier, Richard, Beuret, Gacouin, Boulain, Mercier, Badet, Mercat, Baudin, Clavel, Chatellier, Jaber, Rosselli, Mancebo, Sirodot, Hilbert, Bengler, Richecoeur, & Ayzac, 2013). This mechanism corresponds to the results of the study, where an increase in SpO_2 occurs immediately after a change in position. Thus, pronation is not just an additional action, but an evidence-based physiological strategy.

From a nursing perspective, the success of pronation is highly dependent on close coordination and monitoring. This procedure requires airway security, ventilator hose stabilization, vascular access protection, prevention of decubitus, and hemodynamic observation during position changes. In critical patients with vasopressors and multiple lines, pronation is at risk of causing accidental extubation, catheter dislocation, or decreased blood pressure if not done systematically.

During the pronation position, the nurse is also responsible for evaluating the pressure of the face, eyes, chest, knees, and genital areas to prevent compression injuries. In addition, changes in respiratory parameters such as SpO_2, airway pressure, and ventilator synchronization should be monitored periodically. The success of pronation is

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

greatly influenced by the competence of the nursing team in maintaining the safety of procedures and evaluating patient responses (Vollman, 2020).

In this case, the improvement in hemodynamics after increased oxygenation showed a close relationship between respiratory function and circulatory stability. When hypoxemia is reduced, the need for cardiovascular compensation decreases, so systemic perfusion also improves. This shows that respiratory interventions can have systemic effects on septic shock patients.

When compared to other studies, ARDS patients who did not show a response to pronation often had a more extensive lung injury or delay in action. On the other hand, a quick response like in this case shows that there is still a recruitable lung, so the prognosis of respiration is relatively better.

Thus, the results of this study show that the role of nursing in the implementation and evaluation of pronation is very important to increase oxygenation quickly and safely in critical patients. In patients with encephalitis with septic shock, DIC, and ARDS, pronation is an important intervention that supports clinical stabilization during the intensive phase.

Neurological Status

Clinical findings showed that the patient initially came in a composing state, but during the course of treatment experienced a decrease in mental status to be confused with a GCS score of 13/15 when admitted to the ICU. The change in consciousness that occurs in a short time shows the progression of neurological disorders and is an important indicator of the deterioration of the patient's systemic condition.

The decrease in consciousness in this case cannot be seen as a result of encephalitis alone. Clinically, changes in neurological status in critical patients are often multifactorial, including inflammatory processes of the central nervous system, cerebral hypoperfusion due to shock, metabolic disorders, hypoxemia, and systemic toxic responses. Therefore, serial neurological evaluation becomes an essential part of monitoring patients with sepsis and brain infections.

A CT scan of the head without contrast showed no acute intracranial hemorrhage, mass effects, or midline shifts. These findings are important because they rule out acute structural causes such as cerebral hemorrhage or herniation. However, normal CT results do not rule out the inflammatory process of the brain parenchyma, especially in the early stages of encephalitis.

Follow-up examination via head MRI with contrast showed T2 hyperintensity in the left hippocampus accompanied by diffusion restriction, with no abnormal post-contrast enhancement. The findings are highly suggestive of viral encephalitis, particularly the involvement of the temporal/limbic lobes that is often found in Herpes Simplex Virus (HSV) encephalitis. MRI has a higher sensitivity than CT in detecting early changes in brain tissue in cases of encephalitis.

Pathophysiologically, hippocampal involvement can explain the appearance of behavioral changes, confusion, memory impairment, and decreased consciousness. HSV encephalitis has a predilection for the medial temporal lobe and limbic system, so neuropsychiatric symptoms often dominate in the early phases (Venkatesan, Tunkel, Bloch, Lauring, Sejvar, Bitnun, Stahl, Mailles, Drebot, & Rupprecht, 2019). The radiological findings of these patients correspond to this pattern.

From a nursing perspective, the change of GCS from compos mentis to confused is an important signal that demands an escalation of supervision. Neurological monitoring includes not only GCS scores, but also orientation, pupil response, motor movements, agitation, seizures, and behavioral changes. A decrease in one component of GCS alone can be an early sign of cerebral hypoxia or an increase in systemic inflammation that requires immediate action.

In the ICU phase, the need for intubation is also related to the decrease in airway protection due to changes in consciousness. In this situation, the nurse plays a role in maintaining the patient's neurological safety through head elevation, aspiration prevention, temperature control, reduction of excess stimulus, and observation of signs of increased intracranial pressure.

Other studies have shown that decreased awareness in sepsis patients is correlated with higher mortality and longer ICU stays. Sepsis-associated encephalopathy is often an early manifestation of poorly recognized organ failure (Gofton & Young, 2012). This confirms that neurological changes should be considered a serious clinical indicator.

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

Cardiac Involvement in a Young Adult Patient

Electrocardiographic findings in this study demonstrated an abnormal ECG pattern, including STEMI (acute MI), lateral injury pattern, inferior infarction, rightward axis, and poor R-wave progression during the critical phase. In a 22-year-old patient, such cardiac involvement is relatively uncommon when associated with primary atherosclerotic coronary artery disease. Therefore, these findings are more reasonably explained as secondary complications resulting from severe systemic processes occurring during encephalitis, septic shock, and disseminated intravascular coagulation (DIC).

At a young age, classical myocardial infarction caused by coronary atherosclerosis is generally less common because chronic risk factor exposure, such as longstanding hypertension, diabetes mellitus, dyslipidemia, and vascular degeneration, has usually not progressed significantly. However, myocardial injury in young patients may still occur through non-atherosclerotic mechanisms, particularly during critical illnesses such as severe sepsis. Ibanez et al. (2018) reported that myocardial infarction in younger populations is more frequently triggered by vasospasm, acute thrombosis, myocarditis, hypercoagulability, or oxygen supply-demand mismatch rather than chronic atherosclerotic plaque rupture (Ibanez, James, Agewall, Antunes, Bucciarelli-Ducci, Bueno, & Widimský, 2018).

In this case, the strongest contributing factor was septic shock. Severe hypotension (65/36 mmHg) reduced coronary perfusion, while tachycardia (128 beats/minute) increased myocardial oxygen demand. This imbalance between oxygen supply and demand is recognized as Type 2 Myocardial Infarction. Type 2 MI commonly occurs in sepsis, anemia, hypotension, or arrhythmia without primary coronary occlusion (Thygesen, Alpert, Jaffe, Chaitman, Bax, Morrow, & White, 2019). Therefore, the ST-segment changes in this patient were more likely related to systemic hypoperfusion than classic atherothrombotic infarction.

The second factor was disseminated intravascular coagulation (DIC). In DIC, widespread microthrombi form in the microcirculation, including the small coronary vessels. Such microthrombosis may cause myocardial ischemia even when the major coronary arteries remain patent. DIC causes microvascular thrombosis and multiple organ dysfunction, including cardiac involvement (Iba et al., 2019). This is consistent with the patient's severe thrombocytopenia and progressive coagulation abnormalities.

The third factor was systemic inflammatory response. Sepsis triggers the release of cytokines such as TNF-α and IL-6, which suppress myocardial contractility, induce endothelial dysfunction, and impair myocardial cellular metabolism. This condition is known as septic cardiomyopathy. Septic cardiomyopathy is often reversible but may present with ECG changes, elevated cardiac biomarkers, and reduced cardiac output during the acute phase (Beesley, Weber, Sarge, Nikravan, Grissom, Lanspa, & Brown, 2018).

The fourth factor was severe hypoxemia secondary to ARDS. The patient's oxygen saturation dropped to 84% before improving after prone positioning. Hypoxia further aggravates myocardial ischemia because arterial oxygen delivery to cardiac tissue decreases. In patients with shock, the combination of hypotension and hypoxemia creates a dual burden on the myocardium.

Furthermore, young age does not completely eliminate cardiovascular risk. Some young patients may have hidden factors such as smoking, inherited coagulation disorders, stimulant use, viral myocarditis, or undiagnosed congenital coronary abnormalities. However, based on the clinical course of this case, acute systemic factors appeared more dominant than chronic cardiovascular causes.

From a nursing perspective, cardiac involvement in young patients should be carefully anticipated because it is often unexpected. Serial ECG monitoring, blood pressure surveillance, peripheral perfusion assessment, urine output observation, and signs of reduced cardiac output are essential. In critically ill patients, ECG changes in young adults should not be underestimated solely because of their age.

Therefore, cardiac involvement in this young adult patient was most likely caused by a combination of septic shock, DIC, systemic inflammation, and hypoxemia, leading to secondary acute myocardial injury. This finding emphasizes that young age is not always protective against cardiac complications during multisystem critical illness.

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

Clinical Evaluation and the Role of Nurses

The patient's progress during treatment shows a gradual response to the given intervention. After fluid resuscitation and vasopressor support, blood pressure increased from 65/36 mmHg to 90/62 mmHg with a MAP of 70 mmHg before transfer to the ICU. These changes show improved circulatory stability in the early phases, although patients still require advanced intensive monitoring. In the aspect of tissue perfusion, lactate levels decreased from 7.47 mmol/L to 2.26 mmol/L. The decrease showed improved systemic perfusion and reduced cellular hypoxia after resuscitation therapy. In clinical practice, the serial lactate trend is an important indicator of the effectiveness of septic shock management.

Improvements are also seen in respiratory function. After mechanical ventilation and pronation positions were performed, the oxygen saturation increased from 84% to 98%. This response indicates increased gas exchange and the success of advanced ventilation strategies. As oxygenation improves, the need for vasopressors also begins to decrease, signaling an improvement in overall hemodynamic conditions.

The initiation of enteral nutrition during the advanced phase indicates improved patient clinical tolerance and better organ stability. In critical patients, the ability to receive enteral nutrients is one of the indicators of recovery because it reflects more adequate gastrointestinal function and decreased metabolic stress. All of these changes are inseparable from the role of nurses in continuous monitoring and clinical evaluation. The nurse conducted serial observations of blood pressure, pulse, oxygen saturation, breathing patterns, consciousness, vasopressor needs, fluid balance, and laboratory results. The data is the basis for assessing whether the patient has improved, stagnated, or worsened.

In these cases, nurses also act as a liaison between professions through rapid reporting of changes in the patient's condition, so that clinical decisions such as vasopressor titration, intubation, mechanical ventilation, pronation, and coagulation correction can be made in a timely manner. The nurses' clinical judgment is determined by the ability to recognize changes, interpret data, respond appropriately, and evaluate the outcome of actions (Tanner, 2006). This model is evident in the course of this patient's case.

When compared to other studies, sepsis patients who received intensive monitoring and early response to clinical changes had better outcomes than patients with delayed detection of deterioration. The continuous nursing surveillance contributes greatly in preventing failure to rescue in critical patients (Massey, Chaboyer, & Anderson, 2017). Thus, the results of this study show that continuous clinical evaluation by nurses plays an important role in assessing the success of therapy, accelerating intervention adjustments, and supporting patient recovery. In patients with encephalitis with complications of septic shock and DIC, the quality of nursing monitoring is an important factor in improving safety and clinical outcomes.

CONCLUSIONS

This study shows that encephalitis patients in young adults can experience rapid deterioration to overt shock with complications of septic shock, disseminated intravascular coagulation (DIC), severe respiratory disorders, and multisystem involvement. The condition is characterized by severe hypotension, tachycardia, hyperlactatemia, progressive thrombocytopenia, coagulation disorders, decreased neurological status, and refractory hypoxemia. These findings confirm that encephalitis not only impacts the central nervous system, but can also progress to life-threatening systemic disorders.

The purpose of the study to analyze the contribution of early detection of nursing in recognizing clinical deterioration is evident through the results of this case. Continuous monitoring of hemodynamics, tissue perfusion, respiration, neurological status, as well as laboratory parameters allows changes in the patient's condition to be recognized quickly so that interventions such as fluid resuscitation, vasopressors, mechanical ventilation, pronation, and coagulation correction can be performed in a timely manner. The study's main scientific finding is that early detection by nurses through systematic observation and multisystem data interpretation plays an important role in critical patient safety. The success of the management in this case depends not only on medical therapy, but also on the quality of nursing monitoring that is able to identify deterioration and evaluate therapeutic responses on an ongoing basis.

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

SUGGESTION

Based on the results of the study, hospitals need to strengthen the competence of critical nurses in the early recognition of shock, lactate and blood gas interpretation, monitoring of mechanical ventilation, and treatment of patients with complex coagulopathy. Further research is recommended using case series or multicenter studies to obtain broader evidence on the contribution of nursing in the management of critical patients with central nervous system infections and multisystem complications.

REFERENCES

Alam, A. M., Easton, A., Nicholson, T. R., Irani, S. R., Davies, N. W., Solomon, T., & Michael, B. D. (2023). Encephalitis: diagnosis, management and recent advances in the field of encephalitides. *Postgraduate Medical Journal*, *99*(1174), 815-825.

Beesley, S. J., Weber, G., Sarge, T., Nikravan, S., Grissom, C. K., Lanspa, M. J., & Brown, S. M. (2018). Septic cardiomyopathy. *Critical care medicine*, *46*(4), 625-634.

Bellani, G., Laffey, J. G., Pham, T., Fan, E., Brochard, L., Esteban, A., Gattinoni, L., van Haren, F., Larsson, A., McAuley, D. F., Ranieri, M., Rubenfeld, G., Thompson, B. T., Wrigge, H., Slutsky, A. S., & Pesenti, A. (2016). Epidemiology, patterns of care, and mortality for patients with acute respiratory distress syndrome in intensive care units in 50 countries. *Jama*, *315*(8), 788-800.

Evans, L., Rhodes, A., Alhazzani, W., Antonelli, M., Coopersmith, C. M., French, C., Machado, F. R., Mcintyre, L., Ostermann, M., Prescott, H. C., Schorr, C., & Levy, M. (2021). Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021. *Intensive care medicine*, *47*(11), 1181-1247.

Gofton, T. E., & Young, G. B. (2012). Sepsis-associated encephalopathy. *Nature Reviews Neurology*, *8*(10), 557-566.

Guérin, C., Reignier, J., Richard, J. C., Beuret, P., Gacouin, A., Boulain, T., Mercier, E., Badet, M., Mercat, A., Baudin, O., Clavel, M., Chatellier, D., Jaber, S., Rosselli, S., Mancebo, J., Sirodot, M., Hilbert, G., Bengler, C., Richecoeur, J., & Ayzac, L. (2013). Prone positioning in severe acute respiratory distress syndrome. *New England journal of medicine*, *368*(23), 2159-2168.

Hernández, G., Ospina-Tascón, G. A., Damiani, L. P., Estenssoro, E., Dubin, A., Hurtado, J., Friedman, G., Castro, R., Alegría, L., Teboul, J. L., Cecconi, M., & Bakker, J. (2019). Effect of a resuscitation strategy targeting peripheral perfusion status vs serum lactate levels on 28-day mortality among patients with septic shock: the ANDROMEDA-SHOCK randomized clinical trial. *Jama*, *321*(7), 654-664.

Iba, T., Levy, J. H., Raj, A., & Warkentin, T. E. (2019). Advance in the management of sepsis-induced coagulopathy and disseminated intravascular coagulation. *Journal of clinical medicine*, *8*(5), 728.

Ibanez, B., James, S., Agewall, S., Antunes, M. J., Bucciarelli-Ducci, C., Bueno, H., & Widimský, P. (2018). 2017 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation: The Task Force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology (ESC). *European heart journal*, *39*(2), 119-177.

Levi, M., & Scully, M. (2018). How I treat disseminated intravascular coagulation. *Blood, The Journal of the American Society of Hematology*, *131*(8), 845-854.

Massey, D., Chaboyer, W., & Anderson, V. (2017). What factors influence ward nurses' recognition of and response to patient deterioration? An integrative review of the literature. *Nursing open*, *4*(1), 6-23.

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111

Matthay, M. A., Zemans, R. L., Zimmerman, G. A., Arabi, Y. M., Beitler, J. R., Mercat, A., Herridge, M., Randolph, A. G., & Calfee, C. S. (2019). Acute respiratory distress syndrome. *Nature reviews Disease primers*, *5*(1), 18.

Potter, A., Perry, A. G., Stockert, P. A., & Hall, A. (2021). Fundamentals of nursing (10th ed.). Elsevier.

Seymour, C. W., Gesten, F., Prescott, H. C., Friedrich, M. E., Iwashyna, T. J., Phillips, G. S., & Levy, M. M. (2017). Time to treatment and mortality during mandated emergency care for sepsis. *New England Journal of Medicine*, *376*(23), 2235-2244.

Tanner, C. A. (2006). Thinking like a nurse: A research-based model of clinical judgment in nursing. *Journal of Nursing Education*, 45(6), 204–211.

Thygesen, K., Alpert, J. S., Jaffe, A. S., Chaitman, B. R., Bax, J. J., Morrow, D. A., & White, H. D. (2019). Fourth universal definition of myocardial infarction (2018). *European heart journal*, *40*(3), 237-269.

Urden, L. D., Stacy, K. M., & Lough, M. E. (2022). *Critical care nursing: Diagnosis and management* (9th ed.). Elsevier.

Venkatesan, A., Tunkel, A. R., Bloch, K. C., Lauring, A. S., Sejvar, J., Bitnun, A., Stahl, J., Mailles, A., Drebot, M., & Rupprecht, C. E. (2019). Case definitions, diagnostic algorithms, and priorities in encephalitis. *Clinical Infectious Diseases*, 68(2), 239–248.

Vollman, K. M. (2020). Prone positioning for patients with severe ARDS: A practical guide for nurses. *Critical Care Nurse*, 40(5), 612–620.

Ware, L. B., Koyama, T., Zhao, Z., Janz, D. R., Wickersham, N., Bernard, G. R., & Matthay, M. A. (2013). Biomarkers of lung epithelial injury and inflammation distinguish severe sepsis patients with acute respiratory distress syndrome. *Critical care*, *17*(5), R253.

Wiseman, T., Kourouche, S., Jones, T., Kennedy, B., & Curtis, K. (2024). The impact of whole of patient nursing assessment frameworks on hospital inpatients: A scoping literature review. *Journal of Advanced Nursing*, *80*(9), 3448-3463.

Wunrow, H. Y., Bender, R. G., Vongpradith, A., Sirota, S. B., Swetschinski, L. R., Novotney, A., & Djalalinia, S. (2023). Global, regional, and national burden of meningitis and its aetiologies, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet Neurology*, *22*(8), 685-711.

Nurul Anisa*, Flaviliant Nurul, Asep Kartiwa, Ayu Prawesti Priambodo, Ristina Mirwanti

Fakultas Keperawatan Universitas Padjadjaran
Corresponding author: *E-mail: nurulanisa25016@mail.unpad.id

DOI: https://doi.org/10.33024/minh.v9i4.3111