Review of Contemporary Philosophy
ISSN: 1841-5261, e-ISSN: 2471-089X
Vol 22 (1), 2023
Pp 2779 - 2788

Meningitis: Nursing Care Approaches in Acute and Long-Term Management-An Updated Review

[1]-Hajer Ali Hassan Alsuwaylih,[2]-Amal Ramadan Fallatah,[3]- Bassam Faraj Alrasheedi,[4]-Abdullah Mohssen Ali Bajawi.,[5]-Ahmad Jweead Alnawmasi,[6]- Layla Hassan Ateah Jarab,[7]- Ahmad Saleh Almuzaini,[8]-Yahya Hussain Jordi Najmi,[9]-Hatim Ayed Ayed Al Harbi,[10]- Fahad Mohammed Manawir Alhejaili,[11]- Adel Soliman Ali Alsomiry,[12]- Essam Saleh Khidher Alsharabi,[13]-Mohammed Hatem Alhatem,[14]-Rawabi Essa Ahmed Nooli,[15]-Waleed Faleeh Almuhamady,[16]- Abdullah Nafea Alruwaili

1. Ksa, Ministry Of Health, Alomran Hospital
2. Ksa, Ministry Of Health, Al-Salam Hospital
3. Ksa, Ministry Of Health, Long Term Care Hospital
4. Ksa, Ministry Of Health, Altuwal General Hospital
5. Ksa, Ministry Of Health, Long Term Care Hospital
6. Ksa, Ministry Of Health, Jazan General Hospital.
7. Ksa, Ministry Of Health, Madina Health Cluster-Alamal Complex
8. Ksa, Ministry Of Health, Altawal General Hospital
9. Ksa, Ministry Of Health, King Salman Medical City
10. Ksa, Ministry Of Health, Madina Health Cluster-Alamal Complex
11. Ksa, Ministry Of Health, Madina Health Cluster-Alamal Complex
12. Ksa, Ministry Of Health, Madina Health Cluster-Alamal Complex
13. Ksa, Ministry Of Health, Tumair General Hospital
14. Ksa, Ministry Of Health, Eradah & Psychiatric Hospital
15. Ksa, Ministry Of Health, Madina Health Cluster-Alamal Complex
16. Ksa, Ministry Of Health, Long Term Care

Abstract:

Background: Meningitis, an inflammation of the protective membranes surrounding the brain and spinal cord, remains a significant global health challenge. It is primarily caused by bacterial or viral infections, with bacterial meningitis posing the highest risk of mortality. Despite advances in diagnostic and therapeutic methods, meningitis continues to impact millions globally. In 2015, meningitis was responsible for 379,000 deaths worldwide. Effective nursing care is critical in both acute and long-term management of the disease.

Aim: The aim of this review is to examine the nursing care approaches for managing acute and long-term complications associated with meningitis, including diagnosis, treatment, and supportive care strategies.

Methods: This updated review draws on current literature to summarize the pathophysiology, causes, and clinical manifestations of meningitis. Key nursing diagnoses are discussed, along with therapeutic interventions, including pharmacological treatments, supportive care, and long-term management strategies. Additionally, patient outcomes and nursing roles in monitoring and intervention are explored.

Results: The review highlights the significant nursing challenges involved in managing meningitis, particularly in identifying early signs of complications such as increased intracranial pressure and impaired cerebral perfusion. It also emphasizes the need for tailored nursing interventions based on the specific etiology (bacterial, viral, fungal) and the patient's demographic factors. Empiric antibiotic therapy, along

with supportive care, remains essential in acute management. Long-term care focuses on addressing cognitive and neurological deficits, pain management, and rehabilitation.

Conclusion: The review underscores the importance of comprehensive nursing care in the acute and long-term management of meningitis. Nurses play a crucial role in early detection, monitoring for complications, administering therapies, and providing psychological support. Enhanced training and awareness of the varied clinical presentations of meningitis are necessary to improve patient outcomes.

Key Words: Meningitis, Nursing Care, Acute Management, Long-Term Care, Bacterial Meningitis, Viral Meningitis, Intracranial Pressure, Supportive Care, Nursing Interventions.

Received: 13 october 2023 **Revised:** 27 November 2023 **Accepted:** 11 December 2023

Introduction:

Meningitis is characterized by inflammation of the meninges, which comprise three protective membranes—the dura mater, arachnoid mater, and pia mater—encasing the brain and spinal cord. In contrast, encephalitis denotes inflammation of the brain tissue itself [1][2]. Historical records contain descriptions of symptoms indicative of meningeal inflammation; however, the term "meningitis" was only widely adopted following its definition by surgeon John Abercrombie in 1828. Despite advancements in diagnostics, therapeutic interventions, and vaccination strategies, meningitis remains a significant global health challenge. In 2015, the condition accounted for 8.7 million reported cases globally, resulting in 379,000 deaths [3][4][5].

Nursing Diagnoses

Nursing diagnoses for meningitis include a spectrum of physiological and psychological considerations. Ineffective tissue perfusion arises from cerebral edema, often manifesting as hypercapnia. Hyperthermia, attributed to infection, is evidenced by elevated body temperatures. Patients may experience acute pain due to increased intracranial pressure, frequently accompanied by headaches. Cognitive impacts such as disturbed sensory perception are linked to reduced consciousness and altered sensorium. Anxiety often results from the patient's concerns about hospitalization and the severity of the illness. Knowledge deficits regarding the condition and its treatment are evident in patients requesting additional information about medications and symptoms. Additionally, patients are at risk for injury due to impaired neurological regulation, and impaired physical mobility may result from intravenous infusions, nuchal rigidity, or the application of restraining devices. Family members might experience interrupted processes due to the critical nature of the condition and its uncertain prognosis. Finally, ineffective airway clearance caused by neuromuscular damage can lead to breathing difficulties, necessitating careful nursing interventions.

Causes

Meningitis is a potentially fatal disorder primarily caused by bacterial or viral agents, with a mortality rate nearing 25% even in the modern healthcare era. Infections remain the most frequent etiology, although non-infectious factors such as autoimmune conditions, malignancies, and adverse drug reactions also contribute. Bacterial, viral, fungal, and parasitic pathogens are the principal infectious culprits.

Risk Factors

The risk factors for meningitis encompass both environmental exposures and individual vulnerabilities. Chronic medical conditions, including renal failure, diabetes, adrenal insufficiency, and cystic fibrosis, significantly increase susceptibility. Extremes of age, such as infancy and advanced age, are also critical factors. Undervaccination and immunosuppression—resulting from congenital immunodeficiencies, iatrogenic causes, transplant procedures, or AIDS—further elevate the risk. Environmental factors such as overcrowding and travel to endemic regions, including areas in the southwestern United States for coccidioidomycosis and the northeastern United States for Lyme disease, play an essential role. Additional risk factors include exposure to vectors (mosquitoes and ticks), a history of alcohol use disorder, the presence of ventriculoperitoneal shunts, external ventricular drains, or a

penetrating head injury, and recent medical procedures such as lumbar punctures or cranial surgeries. In the United States, bacterial meningitis has an annual incidence rate of 1.38 cases per 100,000 individuals and a case fatality rate of 14.3% [6]. The global epidemiology highlights a significant burden in sub-Saharan Africa's "meningitis belt," which extends from Ethiopia to Senegal [7][4][8].

Pathogens

The most common bacterial pathogens in the United States include Streptococcus pneumoniae (incidence of 0.3 per 100,000 in 2010), Group B Streptococcus, Neisseria meningitidis (0.123 per 100,000), Haemophilus influenzae (0.058 per 100,000), and Listeria monocytogenes [9]. Specific pathogens should be considered in distinct clinical scenarios, such as Staphylococcus aureus in post-surgical or trauma cases, Mycobacterium tuberculosis in immunocompromised patients, Borrelia burgdorferi following travel to endemic areas, Treponema pallidum in HIV/AIDS patients or individuals with high-risk sexual behaviors, and Escherichia coli, which is a prominent neonatal pathogen.

Viral etiologies are predominantly attributed to non-polio enteroviruses (group B coxsackievirus and echovirus), with additional contributions from mumps, parechoviruses, herpesviruses (Epstein-Barr virus, herpes simplex virus, and varicella-zoster virus), measles, influenza, and arboviruses (West Nile virus, La Crosse virus, Powassan virus, and Jamestown Canyon virus). Fungal meningitis is most commonly observed in immunocompromised hosts, including individuals with HIV/AIDS, cancer, or those undergoing prolonged corticosteroid therapy. Cryptococcus neoformans, Coccidioides immitis, Aspergillus, Candida, and Mucormycosis are frequently implicated fungi, with the latter being particularly associated with diabetes mellitus and transplant recipients, often arising from sinus infections. In summary, meningitis represents a multifaceted medical condition necessitating comprehensive diagnostic and therapeutic strategies. Enhanced understanding of risk factors, causative agents, and clinical manifestations is critical for improving outcomes and reducing the global burden of this life-threatening condition.

Assessment

The clinical presentation of meningitis is highly variable, influenced by the host's age and immune status. Typical manifestations include fever, neck stiffness or pain, and sensitivity to light (photophobia). Non-specific symptoms such as headaches, dizziness, confusion, irritability, nausea, vomiting, and delirium may also occur. A poor prognosis is associated with signs of increased intracranial pressure, including altered mental states, neurological deficits, and seizures. Certain factors heighten clinical suspicion for meningitis. These include recent exposure in communal settings (e.g., military barracks or college dormitories), incomplete vaccination status, and immunosuppression. Age is a critical determinant, with children under five years and adults over 65 years at increased risk. Alcohol use disorder is another notable risk factor. A thorough patient history should explore recent travel, head injuries, neurosurgical interventions, sexual contacts, and exposure to animals. Seasonal variations are also relevant, as viral meningitis often peaks during warmer months. In adults, physical examinations focus on detecting meningeal irritation (evidenced by positive Brudzinski or Kernig signs), focal neurological deficits, and characteristic skin manifestations (e.g., petechiae and purpura) in cases of meningococcal meningitis. Cranial nerve abnormalities are observed in 10%-20% of cases. Neonates and infants present unique challenges, with symptoms often being subtle. They may exhibit fever or hypothermia, decreased feeding, irritability, altered consciousness, or bulging fontanelles. Gathering a comprehensive perinatal and vaccination history is crucial, as some causative agents, such as *Haemophilus influenzae* type B, *Neisseria meningitidis*, and *Streptococcus pneumoniae*, are vaccine-preventable.

Evaluation

The diagnosis of meningitis primarily relies on cerebrospinal fluid (CSF) analysis. A lumbar puncture (LP) is performed to collect CSF, allowing measurements of opening pressure, white blood cell count, glucose levels, protein concentration, and microbial culture. Advanced diagnostics, such as polymerase chain reaction (PCR), may be employed to identify specific pathogens [10][11][12]. Additional tests are conducted based on the suspected etiology. For viral meningitis, multiplex or targeted PCR tests

are performed. Fungal meningitis evaluation includes fungal cultures and the India ink stain for *Cryptococcus*. In suspected mycobacterial meningitis, acid-fast bacilli smears and cultures are used. Syphilis-related meningitis necessitates CSF Venereal Disease Research Laboratory (VDRL) testing, while Lyme disease is investigated through *Borrelia burgdorferi* antibody assays in CSF. Expected CSF findings in bacterial, viral, and fungal meningitis differ, with variations in glucose, protein levels, and white cell counts providing diagnostic clues. Ideally, CSF samples should be obtained before administering antimicrobials. However, in critically ill patients with a high clinical suspicion of bacterial meningitis, antibiotic treatment should not be delayed for LP.

Imaging and Additional Evaluations

A computed tomography (CT) scan of the head is sometimes performed before lumbar puncture to rule out conditions like increased intracranial pressure or brain herniation, which could exacerbate following an LP. Although there is ongoing debate over whether LP itself incites herniation in these contexts, current guidelines advocate initiating empiric antibiotics and supportive care if symptoms suggest elevated intracranial pressure, deferring LP where herniation risk exists. Clinical indicators of impending herniation include a Glasgow Coma Scale (GCS) score below 11, lethargy, altered mental states, recent-onset seizures, or focal neurological deficits. It is critical to recognize that a normal head CT does not eliminate the possibility of increased intracranial pressure. Treatment should be prioritized based on clinical presentation, irrespective of imaging findings. Blood investigations complement CSF analysis, including blood cultures, serum glucose, renal and liver function tests, and HIV screening. Serum electrolytes should also be assessed, as the syndrome of inappropriate antidiuretic hormone secretion (SIADH) is a recognized complication in meningitis cases.

Medical Management

Effective medical management of bacterial meningitis relies on the administration of appropriate antibiotics and supportive care. This foundational approach includes airway management, ensuring adequate oxygenation, providing intravenous fluids, and implementing measures to control fever [13][14][15]. The selection of antibiotics is tailored to the suspected causative organism, which requires consideration of patient demographics and medical history to ensure optimal antimicrobial coverage. Current empiric therapy recommendations vary according to patient age, immune status, and clinical context.

Empiric Antibiotic Therapy by Patient Group:

- **Neonates (up to 1 month old):** Intravenous (IV) administration of ampicillin combined with cefotaxime (or ceftazidime/cefepime) or gentamicin, along with acyclovir for viral coverage.
- **Infants older than 1 month:** IV ampicillin and ceftriaxone are recommended.
- **Adults (18 to 49 years):** Therapy involves IV ceftriaxone and vancomycin to cover a broad spectrum of bacterial pathogens.
- **Adults over 50 years and immunocompromised individuals:** A regimen of IV ceftriaxone, vancomycin, and ampicillin is used to ensure coverage for *Listeria monocytogenes*.
- **Meningitis associated with a foreign body (e.g., post-procedure or penetrating trauma):** Empiric therapy includes IV cefepime, ceftazidime, or meropenem, combined with vancomycin to address multidrug-resistant pathogens.
- **Severe penicillin allergies:** IV moxifloxacin and vancomycin are used as alternatives.
- **Fungal meningitis (e.g., Cryptococcal meningitis):** IV amphotericin B is paired with oral flucytosine.

Antibiotic Agents and Mechanisms:

- **Ceftriaxone:** A third-generation cephalosporin with excellent central nervous system (CNS) penetration, providing robust coverage against *Streptococcus pneumoniae* and *Neisseria meningitidis*. It outperforms piperacillin-tazobactam in CNS infections caused by gram-negative bacteria.
- **Vancomycin:** Effective against gram-positive organisms, including methicillin-resistant *Staphylococcus aureus* (MRSA), and resistant pneumococcal strains.
- **Ampicillin:** Essential for addressing *Listeria monocytogenes*, a gram-positive bacillus often implicated in older or immunocompromised patients.
- **Cefepime:** A fourth-generation cephalosporin offering extended activity against pseudomonas species.
- **Cefotaxime:** Equivalent to ceftriaxone, safe for neonates, and frequently used in neonatal meningitis.

Steroid Therapy

The routine use of steroids in bacterial meningitis remains controversial. Evidence suggests potential benefits in reducing mortality among patients with *Streptococcus pneumoniae* meningitis. However, no mortality reduction has been observed for *Haemophilus influenzae* or *Neisseria meningitidis* meningitis. In pediatric cases of *Haemophilus influenzae* meningitis, steroid administration has been associated with a decreased risk of severe hearing impairment [16].

Management of Increased Intracranial Pressure

Patients exhibiting clinical signs of increased intracranial pressure—such as altered mental status, neurological deficits, non-reactive pupils, or bradycardia—require immediate interventions to preserve cerebral perfusion. Recommended measures include:

1. Elevating the head of the bed to 30 degrees to promote venous drainage.
2. Inducing mild hyperventilation in intubated patients to reduce cerebral blood flow and intracranial pressure.
3. Administering osmotic diuretics, such as 25% mannitol or hypertonic 3% saline, to decrease intracranial fluid volume.

Chemoprophylaxis

Prophylactic antibiotics are crucial for individuals in close contact with patients diagnosed with *Neisseria meningitidis* or *Haemophilus influenzae* type B meningitis. Close contacts are defined as household members, intimate partners, individuals sharing utensils, and healthcare workers exposed to respiratory secretions (e.g., during mouth-to-mouth resuscitation or intubation without protective gear).

- **For *N. meningitidis* contacts:** Recommended prophylaxis includes rifampin, ciprofloxacin, or ceftriaxone.
- **For *H. influenzae* type B contacts:** Rifampin is the prophylactic agent of choice.

By implementing these evidence-based strategies, clinicians can effectively address bacterial meningitis, mitigate complications, and reduce transmission risks.

Nursing Management

Effective nursing management of meningitis involves comprehensive monitoring and proactive interventions to address potential complications. Regularly assessing and documenting the patient's vital signs is critical for identifying clinical deterioration. Monitoring the Glasgow Coma Scale (GCS), particularly the motor response, is essential; any decline in GCS should be immediately reported to the attending physician. Mental status evaluations and psychological support are important for conscious patients to alleviate stress and promote recovery. To facilitate venous drainage from the brain, the patient's head should be elevated to 30 degrees with the neck maintained in a straight position. Establishing intravenous (IV) access is necessary for administering fluids and prescribed medications, including antibiotics, which are vital in managing the infection. Oxygen therapy should be provided if oxygen saturation levels are

suboptimal. If intracranial pressure is elevated, mannitol should be administered as prescribed. Similarly, if seizures occur, phenytoin should be administered according to the treatment protocol. Safety measures, such as raising side rails, are essential to prevent falls during seizures. Pupil size and light responsiveness should be assessed regularly, as changes may indicate elevated intracranial pressure. Additionally, auditory function in both ears should be evaluated.

Laboratory investigations play a critical role in patient care. This includes monitoring renal and liver function tests, evaluating cerebrospinal fluid (CSF) laboratory results, and identifying signs of syndrome of inappropriate antidiuretic hormone secretion (SIADH), which meningitis can induce. Blood sugar levels should be measured before performing a lumbar puncture, especially when sending CSF for glucose analysis. For bedridden patients, repositioning every two hours, alongside the use of air mattresses and thromboembolic deterrent stockings, is recommended to prevent pressure ulcers and deep vein thrombosis. Physical therapy for the limbs and chest can help mitigate complications associated with immobility. Providing a tailored diet plan to meet caloric requirements is essential for overall health, and nasogastric feeding should be initiated for unconscious patients as per medical instructions. Intake and output should be monitored closely, and measures to ensure patient comfort must be implemented.

Indicators for Escalation of Care

Immediate medical intervention is warranted in the presence of unresponsiveness, persistent high-grade fever, new mental status changes, hypotension, hypoxia, bradycardia, seizures, or severe headache. These symptoms signify potential clinical deterioration that requires urgent attention.

Outcome Identification

Timely treatment of meningitis generally results in favorable outcomes. However, patients presenting with altered consciousness often experience higher rates of morbidity and mortality. Seizures, which may be difficult to control or prolonged during the illness, pose additional challenges. Residual neurological deficits following treatment can result in long-term disabilities. Certain factors increase the risk of mortality, including advanced age, low Glasgow Coma Scale scores, reduced white blood cell counts in the CSF, tachycardia, and the presence of gram-positive cocci in CSF samples. Serious complications among survivors can include ataxia, hearing loss, cranial nerve palsies, cognitive impairments, cortical blindness, hydrocephalus, seizures, and focal paralysis. The highest mortality rates are observed in children under 12 months of age, with rates decreasing in middle age but increasing again in advanced age. Overall, bacterial meningitis has a mortality rate of approximately 10%. Mortality is notably higher in infections caused by *Streptococcus* and *Listeria*. While patients with meningococcal meningitis typically respond well to treatment, delayed presentation with meningococcemia increases mortality rates to nearly 30% [17][18].

Monitoring

Effective monitoring is fundamental in managing meningitis, as it aids in identifying potential complications and assessing treatment efficacy. Healthcare professionals must regularly document vital signs, as they are critical indicators of the patient's physiological status. Consistent evaluation of the Glasgow Coma Scale (GCS) score is necessary to detect neurological changes and guide immediate interventions if a decline is observed. Ensuring accurate administration and timing of prescribed medications is paramount to achieving therapeutic outcomes. Additionally, monitoring the patient's dietary pattern is crucial to support recovery and meet nutritional requirements.

Coordination of Care

Meningitis, a life-threatening condition associated with significant morbidity and mortality, necessitates a collaborative interprofessional approach for effective management. Most patients initially present to the emergency department, where a streamlined care process is essential. Triage nurses play a pivotal role in recognizing the signs and symptoms of meningitis and promptly referring patients to

emergency clinicians. Managing such cases requires the involvement of a multidisciplinary team, including neurologists, pediatricians, intensivists, infectious disease specialists, and pharmacists.

In cases of suspected bacterial meningitis, immediate initiation of antibiotic therapy is critical, even before laboratory results are available. Pharmacists, particularly those with expertise in infectious diseases, are instrumental in guiding the selection of appropriate antibiotics based on patient age, local resistance patterns, and the ability of the medication to penetrate the central nervous system. Preventative measures are equally vital. Healthcare professionals, including nurses, physicians, and pharmacists, should actively educate patients and caregivers about vaccine-preventable forms of meningitis caused by *H. influenzae* type B, *S. pneumoniae*, *N. meningitidis*, measles, and varicella. Generalized vaccination programs have significantly reduced meningitis incidence, and families should be informed about the importance of prophylaxis in cases of exposure to *Neisseria* or *H. influenzae* type B. Education should also include recognizing early signs of meningitis and knowing when to seek emergency care [19].

Health Teaching and Health Promotion

Nurses play a critical role in promoting awareness and preventive measures among patients and caregivers. Parents should be advised to ensure their children receive vaccinations against *N. meningitides*. Pharmacists should inform families about prophylactic measures in cases of exposure to *Neisseria meningitis* and educate them on the signs and symptoms requiring urgent medical attention. Nutritional education is essential, emphasizing diets rich in antioxidants, omega-3 fatty acids, probiotics, and citrus fruits to enhance immune function and nutritional absorption. Patients and families should be guided on maintaining personal hygiene to reduce infection risks. Additionally, caregivers should be trained in nasogastric tube feeding techniques for unconscious patients. Safety precautions are critical; patients at risk of seizures should never be left unattended to prevent injuries from falls. Those experiencing blurred vision should avoid operating vehicles until cleared by a physician. Overall, empowering families with knowledge and skills ensures better patient care and outcomes [19].

Risk Management

Given the high morbidity and mortality rates associated with meningitis, risk management requires a well-coordinated interprofessional approach. Triage nurses must be proficient in identifying symptoms and expediting referrals to physicians. Effective care often involves neurologists, pediatricians, intensivists, infectious disease specialists, and pharmacists working collaboratively. Initiating empiric antibiotic therapy immediately in suspected bacterial meningitis cases is essential, even if diagnostic results are pending. Public education campaigns on preventive measures, including vaccination, are integral to reducing disease incidence [19].

Discharge Planning

Comprehensive discharge planning is essential for patients recovering from meningitis to prevent complications and ensure continued recovery. At home, patients should alternate rest and activity to conserve energy while promoting recovery. Basic infection control practices, such as maintaining hygiene and asepsis, should be followed to reduce reinfection risks. Patients and caregivers must be able to recognize early signs of infection, such as fever or neurological symptoms, and promptly report these to healthcare providers. Dietary recommendations include consuming safe, nutritious foods while avoiding alcohol and smoking. Patients should avoid high altitudes and remain in the company of family members for support and monitoring. They should also promptly inform someone nearby of any sudden health discomfort. Adherence to prescribed medications is critical, and patients should not skip doses unless explicitly advised by a healthcare provider [19].

Other Issues

Differentiating between bacterial, viral, and fungal meningitis poses significant diagnostic challenges. CSF analysis often yields inconclusive results, and culture findings may not be immediately available. Given the severe morbidity and mortality risks, initiating empiric antibiotic therapy is a prudent

strategy for suspected meningitis cases. All patients with suspected meningitis should be hospitalized under droplet precautions to prevent transmission and receive comprehensive care [19].

Conclusion:

Meningitis remains a major global health issue, necessitating timely and effective management to reduce morbidity and mortality. The nursing care approach in both acute and long-term settings is critical for optimizing patient outcomes. Acute management involves prompt diagnostic assessment, including cerebrospinal fluid (CSF) analysis, to confirm the etiology and guide appropriate treatment. Nurses are responsible for monitoring vital signs, administering antibiotics, and managing complications such as increased intracranial pressure, which can be life-threatening. The early administration of empiric antibiotics is crucial, and the choice of antibiotics depends on the patient's age, immune status, and specific pathogen suspected. In cases of bacterial meningitis, broad-spectrum antibiotics are often used until the pathogen is identified. Nurses must also be aware of the potential need for adjunctive treatments such as steroids, which may reduce mortality in certain bacterial meningitis cases. Steroid administration, however, remains controversial for some pathogens, and careful assessment of the benefits and risks should guide its use. The management of increased intracranial pressure is a particularly challenging aspect of nursing care. Nurses must take prompt action to maintain cerebral perfusion through interventions like elevating the head of the bed, administering osmotic diuretics, and carefully monitoring neurological status. In the long term, meningitis survivors may experience neurological and cognitive deficits, requiring ongoing rehabilitation. This includes managing pain, addressing cognitive issues, and providing psychological support for both the patient and their family. Additionally, educating patients and their families about the risks of meningitis and the importance of vaccination plays a vital role in preventing future cases. Nurses should take a holistic approach, providing both physical and emotional support throughout the patient's recovery. Overall, the role of nursing in meningitis management is multifaceted, involving early recognition, careful monitoring, timely interventions, and long-term rehabilitation. Improved training and awareness can further enhance nursing practice and ultimately improve patient outcomes in both acute and long-term care settings. Continued research into better treatment protocols and nursing interventions will be essential in reducing the global burden of meningitis.

References:

1. Chalimou I, Krilis A, Anastopoulou GG, Braun H, Vikelis M, Makridou A, Makris N, Argyriou AA. Acute aseptic meningitis during isotretinoin treatment for nodular acne solely presenting with headache: case report and brief review of the literature. Int J Neurosci. 2019 Feb;129(2):204-206.
2. Ali M, Chang BA, Johnson KW, Morris SK. Incidence and aetiology of bacterial meningitis among children aged 1-59 months in South Asia: systematic review and meta-analysis. Vaccine. 2018 Sep 18;36(39):5846-5857.
3. Giovane RA, Lavender PD. Central Nervous System Infections. Prim Care. 2018 Sep;45(3):505-518.
4. Leonard A, Lalk M. Infection and metabolism - Streptococcus pneumoniae metabolism facing the host environment. Cytokine. 2018 Dec;112:75-86.
5. Kasim N, Bagga B, Diaz-Thomas A. Intracranial pathologies associated with central diabetes insipidus in infants. J Pediatr Endocrinol Metab. 2018 Sep 25;31(9):951-958.
6. Thigpen MC, Whitney CG, Messonnier NE, Zell ER, Lynfield R, Hadler JL, Harrison LH, Farley MM, Reingold A, Bennett NM, Craig AS, Schaffner W, Thomas A, Lewis MM, Scallan E, Schuchat A., Emerging Infections Programs Network. Bacterial meningitis in the United States, 1998-2007. N Engl J Med. 2011 May 26;364(21):2016-25.
7. Sadeghi M, Ahmadrajabi R, Dehesh T, Saffari F. Prevalence of meningococcal carriage among male university students living in dormitories in Kerman, southeast of Iran. Pathog Glob Health. 2018 Sep;112(6):329-333.
8. Chauhan D, Mokta K, Kanga A, Grover N. Epidemiology, clinical profile and role of rapid tests in the diagnosis of acute bacterial meningitis in children (aged 1-59 months). Neurol India. 2018 Jul-Aug;66(4):1045-1049.
9. Castelblanco RL, Lee M, Hasbun R. Epidemiology of bacterial meningitis in the USA from 1997 to 2010: a population-based observational study. Lancet Infect Dis. 2014 Sep;14(9):813-9.

10. Güldemir D, Turan M, Bakkaloğlu Z, Nar Ötgün S, Durmaz R. [Optimization of real-time multiplex polymerase chain reaction for the diagnosis of acute bacterial meningitis and Neisseria meningitidis serogrouping]. Mikrobiyol Bul. 2018 Jul;52(3):221-232.
11. Hussien MM, Ali-Eldin F, Adel LA. ASSESSMENT OF THE DIAGNOSTIC AND PROGNOSTIC ROLE OF CEREBEROSPINAL FLUID INTERLEUKIN-8 LEVEL IN ADULT PATIENTS WITH MENINGITIS. J Egypt Soc Parasitol. 2016 Aug;46(2):361-366.
12. El Shorbagy HH, Barseem NF, Abdelghani WE, Suliman HA, Al-Shokary AH, Elsadek AE, Maksoud YHA, Sabri JH. The value of serum procalcitonin in acute meningitis in children. J Clin Neurosci. 2018 Oct;56:28-33.
13. Reid S, Thompson H, Thakur KT. Nervous System Infections and the Global Traveler. Semin Neurol. 2018 Apr;38(2):247-262.
14. Liu ZY, Wang GQ, Zhu LP, Lyu XJ, Zhang QQ, Yu YS, Zhou ZH, Liu YB, Cai WP, Li RY, Zhang WH, Zhang FJ, Wu H, Xu YC, Lu HZ, Li TS., Society of Infectious Diseases, Chinese Medical Association. [Expert consensus on the diagnosis and treatment of cryptococcal meningitis]. Zhonghua Nei Ke Za Zhi. 2018 May 01;57(5):317-323.
15. Dretler AW, Rouphael NG, Stephens DS. Progress toward the global control of Neisseria meningitidis: 21st century vaccines, current guidelines, and challenges for future vaccine development. Hum Vaccin Immunother. 2018 May 04;14(5):1146-1160
16. Brouwer MC, McIntyre P, Prasad K, van de Beek D. Corticosteroids for acute bacterial meningitis. Cochrane Database Syst Rev. 2015 Sep 12;2015(9):CD004405.
17. Edmond K, Clark A, Korczak VS, Sanderson C, Griffiths UK, Rudan I. Global and regional risk of disabling sequelae from bacterial meningitis: a systematic review and meta-analysis. Lancet Infect Dis. 2010 May;10(5):317-28.
18. Munguambe AM, de Almeida AECC, Nhantumbo AA, Come CE, Zimba TF, Paulo Langa J, de Filippis I, Gudo ES. Characterization of strains of Neisseria meningitidis causing meningococcal meningitis in Mozambique, 2014: Implications for vaccination against meningococcal meningitis. PLoS One. 2018;13(8):e0197390.
19. Hersi, K., Gonzalez, F. J., Kondamudi, N. P., & Sapkota, R. (2023). Meningitis (Nursing). In *StatPearls [Internet]*. StatPearls Publishing.

لتهاب السحايا: أساليب الرعاية التمريضية في إدارة الحالات الحادة والطويلة الأمد - مراجعة محدثة

الملخص:

الخلفية: يُعتبر التهاب السحايا، الذي هو التهاب الأغشية الواقية المحيطة بالدماغ والحبل الشوكي، تحديًا صحيًا عالميًا كبيرًا. يسببه بشكل رئيسي العدوى البكتيرية أو الفيروسية، حيث تشكل التهاب السحايا البكتيري أعلى خطر على الحياة. على الرغم من التقدم في أساليب التشخيص والعلاج، لا يزال التهاب السحايا يؤثر على ملايين الأشخاص في جميع أنحاء العالم. في عام 2015، كان التهاب السحايا مسؤولًا عن 379,000 حالة وفاة في جميع أنحاء العالم. تعتبر الرعاية التمريضية الفعّالة أمرًا بالغ الأهمية في إدارة المرض في المراحل الحادة والطويلة الأمد.

الهدف: يهدف هذا المراجعة إلى فحص أساليب الرعاية التمريضية لإدارة المضاعفات الحادة والطويلة الأمد المرتبطة بالتهاب السحايا، بما في ذلك التشخيص والعلاج واستراتيجيات الرعاية الداعمة.

الطرق: تعتمد هذه المراجعة المحدثة على الأدبيات الحالية لتلخيص الفيزيولوجيا المرضية والأسباب والتجليات السريرية لالتهاب السحايا. يتم مناقشة التشخيصات التمريضية الرئيسية، بالإضافة إلى التدخلات العلاجية، بما في ذلك العلاجات الدوائية والرعاية الداعمة واستراتيجيات إدارة الحالات الطويلة الأمد. كما يتم استكشاف نتائج المرضى وأدوار التمريض في المراقبة والتدخل.

النتائج: تسلط المراجعة الضوء على التحديات التمريضية الكبيرة المتعلقة بإدارة التهاب السحايا، وخاصة في التعرف على العلامات المبكرة للمضاعفات مثل زيادة الضغط داخل الجمجمة وضعف التروية الدماغية. كما تؤكد الحاجة إلى تدخلات تمريضية مخصصة بناءً على السبب المحدد (بكتيري، فيروسي، فطري) والعوامل الديموغرافية للمريض. تظل المعالجة بالمضادات الحيوية التجريبية، إلى جانب الرعاية الداعمة، أساسية في إدارة الحالات الحادة. تركز الرعاية الطويلة الأمد على معالجة العجز المعرفي والعصبي، وإدارة الألم، وإعادة التأهيل.

الخاتمة: تؤكد المراجعة على أهمية الرعاية التمريضية الشاملة في إدارة التهاب السحايا في المراحل الحادة والطويلة الأمد. يلعب الممرضون دورًا حيويًا في الكشف المبكر، والمراقبة للمضاعفات، وإعطاء العلاجات، وتقديم الدعم النفسي. من الضروري تعزيز التدريب والوعي بالعروض السريرية المتنوعة لالتهاب السحايا لتحسين نتائج المرضى.

الكلمات المفتاحية: التهاب السحايا، الرعاية التمريضية، الإدارة الحادة، الرعاية الطويلة الأمد، التهاب السحايا البكتيري، التهاب السحايا الفيروسي، الضغط داخل الجمجمة، الرعاية الداعمة، التدخلات التمريضية.