

Nursing Insights into Managing Delirium among Elderly Patients in the Emergency ICU across Five Common Disease Categories

Qiuxiang Hu^{1,a}, Jinyun Chu¹, Lei Peng^{1,*}

¹The First Affiliated Hospital of Sun Yat-sen University, Emergency Ward, Guangzhou, 510000, China
^ahuqiux3@mail.sysu.edu.cn

*Corresponding author: penglei5@mail.sysu.edu.cn

Abstract: A retrospective analysis was conducted on the clinical data of 5 elderly patients with delirium admitted to the EICU, who suffered from acute respiratory distress syndrome (ARDS), severe acute pancreatitis, severe sepsis, chronic renal failure and severe craniocerebral injury respectively. The CAM-ICU scale was used as the main outcome criterion for delirium assessment, and the FAM-CAM scale was applied to assist in rapid screening and dynamic monitoring. Targeted nursing interventions were implemented in combination with the pathological characteristics of each disease, and the nursing effects and experience were summarized. After standardized nursing interventions, all 5 patients met the delirium remission criteria evaluated by the CAM-ICU scale, were transferred to the general ward after their conditions stabilized, and no adverse events such as falls, pressure ulcers and unplanned extubation caused by delirium occurred. For elderly EICU patients with delirium complicating different diseases, the combined assessment model of "CAM-ICU as the main method and FAM-CAM as the supplement" for early identification and dynamic monitoring, combined with individualized nursing interventions based on disease characteristics, can effectively improve delirium symptoms, reduce the incidence of adverse events and enhance the quality of nursing.

Keywords: EICU; Geriatric delirium; CAM-ICU; FAM-CAM; Combined assessment; Individualized nursing

1. Introduction

The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V)* defines delirium as an acute onset of cognitive impairment and disturbance of attention concentration, with fluctuating symptoms, manifested as confused and incoherent thinking and abnormal perceptual functions [1-2]. Foreign scholars refer to delirium patients aged ≥ 65 years as geriatric delirium [4]. Affected by pathological, physiological, pharmaceutical and environmental stress factors, elderly patients are more prone to delirium [3-5].

Patients admitted to the EICU are mostly in critical condition with acute onset, and the proportion of elderly patients is increasing year by year. As a common acute brain dysfunction in the EICU, the incidence of delirium in elderly ICU patients can reach 20%~80% [6]. Delirium not only prolongs the hospital stay of patients [7] and increases medical costs [8], but also may lead to adverse events such as falls, unplanned extubation and pressure ulcers [9], seriously affecting the prognosis of patients.

The inducing factors of delirium in elderly patients in the EICU are complex. Due to different pathophysiological mechanisms of various diseases, the occurrence characteristics and nursing priorities of delirium also vary. In 2001, Ely et al. [10] developed the CAM-ICU on the basis of the Confusion Assessment Method (CAM) for ICU patients who could not communicate verbally due to mechanical ventilation. When used by ICU nurses with certain training, the scale has a sensitivity of 93%-100% and a specificity of 98%-100%, with an assessment duration of about 2 minutes, and is recommended by numerous guidelines and authoritative literatures [11]. The FAM-CAM scale was developed by Steis [12], which can systematically record delirium characteristics, the onset mode and change trend of symptoms. A study by Mailhot et al. [13] on 108 elderly emergency patients confirmed that FAM-CAM highlights the advantages of family members in detecting delirium, which can supplement other screening tools used by clinicians. Moreover, since delirium persists after hospitalization or originates at home, the use of this scale by family members is both feasible and

sustainable. Xing H et al. [14] carried out an application study on critically ill ICU patients after Sinicizing and cross-culturally adapting the FAM-CAM scale, which confirmed that the scale has a sensitivity of 0.880 and a specificity of 0.890, and is suitable for delirium screening in domestic ICUs. This paper retrospectively analyzes the nursing process of elderly patients with delirium complicating 5 common diseases (ARDS, severe acute pancreatitis, severe sepsis, chronic renal failure, severe craniocerebral injury) in the EICU, adopts the combined assessment model of "CAM-ICU as the main method and FAM-CAM as the supplement", summarizes the nursing experience, and provides a reference for clinical targeted nursing interventions. This study has been approved by the Ethics Committee of the First Affiliated Hospital of Sun Yat-sen University (No. [2023]720).

2. Overview of Clinical Data

Five elderly patients with delirium admitted to the EICU of our hospital from June 2024 to November 2024 were selected, and the specific clinical data are as follows:

Case 1: A 72-year-old male with ARDS. Disease data: Induced by severe pneumonia, the patient had a body temperature of 39.2°C, a respiratory rate of 38 breaths per minute, and a blood oxygen saturation (SpO₂) of 82% on admission. Arterial blood gas analysis indicated a PaO₂/FiO₂ ratio of 180 mmHg, and chest computed tomography (CT) showed diffuse inflammatory infiltration shadows in both lungs. Treatment measures: Tracheal intubation combined with invasive mechanical ventilation for respiratory support (ventilation mode: SIMV+PSV, tidal volume 6 ml/kg, PEEP 8 cmH₂O), anti-infection, expectoration, sedation and analgesia, and nutritional support. Delirium symptoms: Confusion occurred 6 hours after admission, with loss of orientation to time and place, restlessness, and attempts to extubate the tracheal tube. Symptoms worsened at night, with auditory hallucinations and shouting "Someone is going to catch me".

Case 2: A 68-year-old male with severe acute pancreatitis. Disease data: Induced by cholelithiasis, the patient had severe epigastric pain with a Numerical Rating Scale (NRS) score of 9 points, accompanied by nausea and vomiting with gastric contents as vomitus on admission. The serum amylase was 1280 U/L, lipase was 2560 U/L, and abdominal CT showed diffuse enlargement of the pancreas with obvious peripheral exudation, complicated with gallbladder stones and common bile duct dilatation. Treatment measures: Fasting and water deprivation, gastrointestinal decompression, fluid resuscitation, anti-infection, pain relief, acid suppression, and inhibition of pancreatic enzyme secretion. Delirium symptoms: Confused thinking and incoherent speech occurred 11 hours after admission, complaining of a "burning sensation" in the abdomen, obvious restlessness, attempts to tear off the gastrointestinal decompression tube, and reversed circadian rhythm.

Case 3: An 82-year-old male with severe sepsis. Disease data: Caused by abdominal infection, the patient had a body temperature of 38.9°C, a heart rate of 132 beats per minute, a blood pressure of 85/50 mmHg, and a respiratory rate of 32 breaths per minute on admission. Routine blood test showed a white blood cell count of 18.6×10⁹/L, a neutrophil percentage of 92%, and procalcitonin (PCT) of 15 ng/ml. Abdominal ultrasound showed peritoneal effusion, and ascites culture was positive for *Escherichia coli*. Treatment measures: Anti-infection, fluid resuscitation, correction of electrolyte disorders, nutritional support, and maintenance of internal environment stability. Delirium symptoms: Inattention occurred 9 hours after admission, with slow and irrelevant answers to questions, accompanied by mild restlessness, unconscious scratching of the bed sheet with both hands, and occasional hallucinations, claiming to "see small animals under the bed". The symptoms were fluctuating, with sudden restlessness after a period of calm.

Case 4: A 75-year-old male with chronic renal failure. Disease data: A 10-year history of chronic glomerulonephritis with long-term maintenance hemodialysis treatment. This acute exacerbation was induced by pulmonary infection. On admission, the serum creatinine was 1260 μmol/L, blood urea nitrogen was 38 mmol/L, uric acid was 680 μmol/L, hemoglobin was 65 g/L, serum potassium was 6.8 mmol/L, and arterial blood gas analysis indicated metabolic acidosis (pH 7.22). Pulmonary CT showed inflammation in both lungs. Treatment measures: Continuous hemodialysis, anti-infection, correction of anemia, correction of metabolic acidosis, and correction of hyperkalemia. Delirium symptoms: Confusion occurred at the 21st hour of dialysis, with cognitive impairment to family members, failing to recognize visiting children, depressed and irritable mood, occasional delusions that medical staff "wanted to harm him", with mild but persistent restlessness.

Case 5: A 65-year-old male with severe craniocerebral injury. Disease data: Transferred from another hospital due to traffic accident trauma, with a Glasgow Coma Scale (GCS) score of 6 points on

admission. Cranial CT showed subdural hematoma and cerebral contusion and laceration in the right frontotemporoparietal lobe, with a midline structure shift of 0.8 cm to the left. Treatment measures: Intracranial pressure monitoring (target <20 cmH₂O), dehydration and intracranial pressure reduction, hemostasis, neurotrophic therapy, sedation and analgesia, tracheotomy combined with mechanical ventilation for respiratory support (ventilation mode: PSV+PEEP, pressure support 12-15 cmH₂O, PEEP 5 cmH₂O, respiratory rate 14 breaths per minute, FiO₂ 40%), and maintenance of cerebral perfusion pressure. Delirium symptoms: Severe restlessness occurred 33 hours after admission with violent struggling, attempts to extubate the intracranial pressure monitoring tube and tracheotomy cannula, excessive response to pain stimulation, incoherent speech, shouting and screaming, and inability to communicate effectively. The symptoms persisted with no obvious circadian difference.

The CAM-ICU scale was used as the main criterion for the diagnosis and outcome assessment of delirium in all patients, and the FAM-CAM scale was simultaneously used for auxiliary screening. A positive assessment result of the CAM-ICU scale confirmed the diagnosis of delirium, and all FAM-CAM scale scores were ≥ 3 points (indicating the presence of delirium-related symptoms).

3. Application of the Combined Assessment Model of "CAM-ICU as the Main Method and FAM-CAM as the Supplement"

3.1 Construction and Implementation Process of the Assessment System

A three-level assessment process of "rapid screening - confirmatory assessment - dynamic monitoring" was constructed: (1) **Rapid screening**: Within 2 hours after admission, family members were first invited to conduct rapid screening using the FAM-CAM scale to initially judge the presence of suspected delirium symptoms; (2) **Confirmatory assessment**: For patients with positive FAM-CAM screening results or clinically highly suspected delirium, the CAM-ICU scale was immediately used for confirmatory assessment to clarify the diagnosis of delirium (the CAM-ICU scale can confirm the diagnosis if the core criteria of "acute onset and fluctuating consciousness + attention disturbance + thinking disorder/orientation disturbance" are met); (3) **Dynamic monitoring**: After the diagnosis of delirium, the CAM-ICU scale was used as the main outcome assessment tool to conduct outcome assessment every 8 hours to judge the remission of delirium; at the same time, the FAM-CAM scale was used as an auxiliary monitoring tool to conduct assessment once a day (11:00-11:30 a.m.), which was the family visiting time in the EICU, facilitating the improvement of assessment combined with family observation information. If the patient's condition fluctuated (such as unstable vital signs, after invasive operations), the frequency of video FAM-CAM assessment was increased to dynamically capture changes in delirium symptoms and provide a basis for the adjustment of nursing interventions.

3.2 Key Points for the Application of the Two Scales

The assessment with the CAM-ICU scale must strictly follow the diagnostic criteria, including four core dimensions: acute onset and fluctuating consciousness, attention disturbance, thinking disorder and orientation disturbance. During the assessment, the patient's medical history and condition changes should be combined, and the assessment should be jointly conducted by 2 trained nurses to ensure the accuracy of diagnosis. The assessment with the FAM-CAM scale requires the presence of family members who are very familiar with the patient's baseline performance, and the responsible nurse assists the family members to complete the assessment to ensure that the assessment results can accurately reflect the patient's cognitive changes compared with the baseline state. The assessment includes five dimensions: consciousness state, attention, orientation, thinking disorder and fluctuating consciousness. The assessment environment should be kept quiet to avoid external interference; for patients who cannot communicate normally due to illness (such as tracheal intubation, early coma), the responsible nurse assists family members to indirectly judge by observing the patient's limb movements, eye contact, response to stimulation and other aspects in combination with the patient's baseline performance. With the advantage of simple assessment of the FAM-CAM scale, rapid capture of delirium symptoms is realized. The assessment results of the two scales should be recorded in a timely manner, an assessment file should be established, and dynamic comparative analysis should be conducted to avoid the limitations of single scale assessment.

4. Nursing Interventions for Elderly Patients with Delirium Complicating Different Diseases

4.1 Nursing of ARDS Patients with Delirium

This 72-year-old male ARDS patient was induced by severe pneumonia complicated with severe hypoxemia, and received mechanical ventilation, anti-infection and other treatments, with delirium symptoms such as confusion, restlessness and extubation attempts, and auditory hallucinations during hospitalization. **Key nursing points:** (1) Strengthen oxygen therapy nursing, strictly maintain mechanical ventilation parameters, monitor SpO₂ and arterial blood gas, ensure SpO₂ ≥90%, and adjust the ventilation plan in a timely manner. (2) Reduce environmental stimulation, keep the ward quiet with soft light, simulate circadian rhythm to help the patient establish a normal sleep cycle; for the patient's auditory hallucinations and loss of orientation, actively inform the patient of the time, name and current environment clearly during shift handover to strengthen his cognitive sense of time and environment. (3) Psychological and humanistic nursing: since the patient could not speak due to mechanical ventilation, communicate concisely through gestures, writing boards and other ways to relieve fear and anxiety; with the consent of family members, record the familiar calls and encouragement recordings of family members, and play them during the period when the patient's auditory hallucinations and restlessness worsen at night to stabilize the mood with family affection signals; place small familiar potted plants brought by family members to create a familiar atmosphere and enhance the confidence in treatment.

4.2 Nursing of Severe Acute Pancreatitis Patients with Delirium

This 68-year-old male severe acute pancreatitis patient was induced by cholelithiasis with severe abdominal pain and significantly elevated amylase, and received fasting and decompression, fluid resuscitation and other treatments, with delirium manifestations such as confused thinking, restlessness and tube tearing, and reversed circadian rhythm. **Key nursing points:** (1) Closely monitor vital signs, consciousness and blood amylase and other indicators, keep gastrointestinal decompression unobstructed, and record drainage status. (2) Establish multiple venous accesses, adjust fluid infusion according to central venous pressure (CVP) to correct water and electrolyte disorders. (3) Pain and nutritional nursing: dynamically assess pain, administer analgesic and sedative drugs as prescribed, implement fasting in the acute phase, and gradually transition to enteral nutrition after the condition stabilizes. (4) Humanistic care measures: for the patient's reversed circadian rhythm, open the curtains regularly and call the patient gently during the day, turn off the main light and use warm light floor lamps at night, and help adjust the biological clock by informing the time during shift handover; since pain is prone to induce restlessness, record the gentle encouragement recordings of family members (such as "Hold on, the pain will ease slowly") and play them before the analgesic drugs take effect to assist in relieving pain-related irritability; place elegant fresh flowers presented by family members to avoid strong odor stimulating the gastrointestinal tract, and at the same time alleviate confused thinking with the family affection atmosphere.

4.3 Nursing of Severe Sepsis Patients with Delirium

This 82-year-old male severe sepsis patient developed septic shock due to abdominal infection, received anti-infection, fluid resuscitation and other treatments, with fluctuating delirium symptoms such as inattention, restlessness and hallucinations. **Key nursing points:** (1) Administer antibiotics on time and in the right amount, monitor vital signs and CVP, and adjust fluid infusion to correct shock. (2) Monitor electrolytes daily and correct disorders in a timely manner. (3) For the high fever of 38.9°C on admission, implement physical cooling to maintain normal body temperature. (4) Individualized humanistic nursing: considering the patient's advanced age, inattention and hallucinations of "seeing small animals", inform the time and bed number repeatedly in a slow and clear tone during shift handover and rounds, and cooperate with gently patting the patient's arm to strengthen perception; collect gentle voices of family members (such as family members telling the patient's familiar past events) and play them softly during the patient's quiet period to divert his attention from hallucinations; place the art works of the patient's eldest grandson brought by family members to beautify the ward environment, and avoid placing items that are easy to produce shadows at the same time to reduce hallucination-inducing factors and alleviate the patient's loneliness.

4.4 Nursing of Chronic Renal Failure Patients with Delirium

This 75-year-old male uremia patient had an acute exacerbation induced by pulmonary infection, received intensified dialysis, anti-infection and other treatments, with delirium symptoms such as confusion, cognitive impairment and irritability after dialysis. **Key nursing points:** (1) Monitor vital signs and consciousness during dialysis, be alert to complications such as hypotension, and adjust dialysis parameters in a timely manner; for the patient's cognitive impairment after dialysis, call the patient by his familiar name before and after dialysis and during shift handover, inform the time clearly and tell the progress of dialysis treatment to help him adapt to the treatment rhythm and strengthen cognition. (2) Monitor electrolytes, blood gas and other indicators, restrict high-potassium diet, and correct anemia and acidosis as prescribed. (3) Infection control and basic nursing: strictly implement aseptic operation, strengthen skin and oral care, and provide high-quality low-protein diet. (4) Family affection-empowered nursing: since the patient failed to recognize family members and was irritable, record the detailed identity introduction and caring words of family members (such as "Dad, I am your son, come to see you, you must cooperate with the treatment well") and play them before visiting to help the patient identify family members; place the patient's favorite ukulele brought by family members, and encourage family members to hold the patient's hand gently and talk about family daily life during visits, so as to improve cognitive impairment and irritable mood through dual family affection stimulation of touch and hearing.

4.5 Nursing of Severe Craniocerebral Injury Patients with Delirium

This 65-year-old male severe craniocerebral injury patient was injured in a traffic accident (GCS score 6 points), received intracranial pressure monitoring, dehydration and intracranial pressure reduction, mechanical ventilation and other treatments, with delirium symptoms such as severe restlessness, tube tearing and incoherent speech. **Key nursing points:** (1) Monitor consciousness, pupils and intracranial pressure, conduct dehydration and intracranial pressure reduction in a timely manner, and strictly follow mechanical ventilation parameters; for the patient's severe restlessness and excessive response to pain stimulation, first call the patient's name gently during shift handover, then inform the time and the identity of medical staff slowly to avoid sudden stimulation aggravating restlessness, and at the same time cooperate with pain stimulation to assess the consciousness state. (2) Keep the respiratory tract unobstructed, turn over and pat the back regularly, and implement strict airway nursing. (3) Limb massage and passive exercise, change body position regularly to prevent deep vein thrombosis and pressure ulcers. (4) Humanistic comfort measures: since the patient's restlessness was related to brain tissue injury and pain, with the consent of family members, record the low and gentle call recordings of family members (avoid loud stimulation) and play them softly in a cycle during the intervals of the patient's restlessness to inhibit restlessness with familiar family affection signals; place cigarettes brought by family members (the patient smoked two packs a day before injury) in a place with mild light within the patient's line of sight to create a warm family affection atmosphere. In the later stage, the patient's delirium symptoms worsened and the effect of conventional sedative drugs was poor. After departmental assessment and sufficient protective measures, the patient's son and wife were arranged to accompany in the ward for 3 hours, and the mood was further comforted and restlessness was relieved through family companionship.

5. Nursing Experience and Effects

Nursing experience: Combining the nursing practice of elderly patients with delirium complicating 5 diseases and centering on the combined assessment model of "CAM-ICU as the main method and FAM-CAM as the supplement", the core nursing experience is summarized as follows: (1) Accurate combined assessment is the premise of early intervention: the FAM-CAM is used to quickly screen the early signs of delirium, and the CAM-ICU is relied on to ensure the accuracy of diagnosis and outcome assessment, taking into account efficiency and rigor. At the same time, distinguish incentive-related consciousness disturbance from delirium to avoid assessment deviation; (2) Prevention first is the key: adhere to the principle of "prevention is better than cure", reduce the use of drugs that are easy to induce delirium, maintain the patient's circadian rhythm, and implement sleep management [15] to reduce the risk of delirium from the source [16]; (3) Etiological targeted intervention is the core: implement targeted measures according to the core inducing factors of each disease (such as improving oxygenation in ARDS, strengthening fluid resuscitation and pain relief in severe acute pancreatitis, etc.) to alleviate symptoms from the root cause [17]; (4) Individualized humanistic nursing is the supplement:

adjust intervention methods according to the patient's delirium manifestations, alleviate adverse emotions with family affection-empowered means such as family recordings, personalized fresh flowers and objects, and arrange family members to participate in nursing after standardized assessment for patients with severe delirium and poor effect of conventional sedation [18]; ⑤ Dynamic monitoring and program adjustment are the guarantee: optimize the monitoring frequency according to the disease type, and adjust nursing measures in a timely manner combined with the scale assessment results to ensure the effectiveness of intervention.

After the above targeted nursing interventions, the 5 patients were dynamically monitored by the combined assessment model of "CAM-ICU as the main method and FAM-CAM as the supplement". All patients met the delirium remission criteria (disappearance of core symptoms) evaluated by the CAM-ICU scale, and their FAM-CAM scale scores all dropped to below 3 points (indicating the disappearance of delirium-related symptoms). No adverse events such as falls, pressure ulcers, unplanned extubation and pulmonary infection occurred during hospitalization. After the conditions stabilized, all patients were successfully transferred to the general ward for further treatment, with an average EICU hospitalization time of (10.4±3.2) days.

6. Discussion and Experience

The inducing factors of delirium in elderly EICU patients are complex. The pathophysiological characteristics of different diseases lead to differences in the occurrence mechanism and clinical manifestations of delirium, so nursing interventions need to be accurately targeted. The CAM-ICU scale, as a delirium assessment standard, ensures the reliability of diagnosis and outcome judgment, and the FAM-CAM scale is suitable for rapid screening and dynamic monitoring with the advantages of simple operation and short time consumption. The combined application of the two can complement each other's advantages and improve the accuracy and efficiency of assessment. In clinical practice, it is necessary to construct a three-level process of "rapid screening - confirmatory assessment - dynamic monitoring", and adjust nursing measures dynamically in combination with disease types and conditions; at the same time, implement environmental humanistic nursing, safety protection, multidisciplinary collaboration and the guideline-recommended ABCDEF bundle [19] (pain and sedation management, early mobilization, family participation, etc.) to strengthen the prevention and treatment effect of delirium.

In conclusion, for elderly EICU patients with delirium complicating different diseases, the combined assessment model of "CAM-ICU as the main method and FAM-CAM as the supplement" for early identification and dynamic monitoring, combined with individualized nursing based on disease characteristics, can effectively improve geriatric delirium symptoms, reduce the incidence of adverse events, shorten the ICU hospitalization time and improve the prognosis. In the future, the combined delirium assessment process and intervention system will be further optimized to enhance the quality of nursing.

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