



Acute Traumatic Epidural Hematoma in Geriatri, case report

Hematoma Epidural Traumatis Akut pada Geriatri, laporan kasus

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ABSTRACT

Cedera Otak Traumatis (TBI) pada populasi lansia merupakan masalah kesehatan global yang semakin signifikan, dengan jatuh menjadi penyebab utama cedera kepala pada kelompok usia ini. Hematoma epidural akut (AEDH), meskipun jarang terjadi pada orang dewasa yang lebih tua, menghadirkan tantangan unik karena adhesi dura mater yang kuat ke tengkorak, yang umumnya mengurangi terjadinya hematoma. Namun, ketika AEDH terjadi, hal itu dapat menyebabkan komplikasi parah yang memerlukan intervensi tepat waktu. Studi kasus ini menyajikan seorang pria berusia 66 tahun dengan AEDH yang disebabkan oleh kecelakaan kendaraan bermotor. Pasien, yang awalnya menunjukkan gejala ringan, didiagnosis dengan AEDH di daerah parietotemporooccipital kanan melalui pencitraan CT kranial. Kraniotomi dilakukan, dan hematoma dikeringkan, yang mengarah pada pemulihan penuh. Kasus ini menggarisbawahi pentingnya pengenalan dini dan intervensi untuk AEDH pada lansia, kelompok yang sering berisiko tinggi karena penyakit penyerta seperti hipertensi dan gangguan keseimbangan. Ini juga menyoroti perlunya strategi manajemen khusus geriatri, karena patofisiologi AEDH berbeda pada orang dewasa yang lebih tua dibandingkan dengan pasien yang lebih muda. Temuan menunjukkan bahwa diagnosis tepat waktu dan intervensi bedah dapat secara signifikan meningkatkan hasil klinis dalam kasus AEDH di kalangan lansia, dan menekankan pentingnya mengatasi risiko spesifik usia dalam manajemen TBI.

Kata kunci: Hematoma Epidural Akut, Lansia, Cedera Otak Traumatis

ABSTRACT

Traumatic Brain Injury (TBI) in the elderly population is an increasingly significant global health concern, with falls being the leading cause of head injuries in this age group. Acute epidural hematomas (AEDH), though rare in older adults, present unique challenges due to the strong adhesion of the dura mater to the skull, which generally reduces the occurrence of hematomas. However, when AEDH does occur, it can lead to severe complications that require timely intervention. This case study presents a 66-year-old male with AEDH caused by a motor vehicle accident. The patient, who initially exhibited mild symptoms, was diagnosed with AEDH in the right parietotemporooccipital region via cranial CT imaging. A craniotomy was performed, and the hematoma was drained, leading to a full recovery. This case underscores the importance of early recognition and intervention for AEDH in the elderly, a group often at increased risk due to comorbidities such as hypertension and balance disorders. It also highlights the need for geriatric-specific management strategies, as the pathophysiology of AEDH differs in older adults compared to younger patients. The findings suggest that timely diagnosis and surgical intervention can significantly improve clinical outcomes in AEDH cases among the elderly, and emphasize the importance of addressing age-specific risks in TBI management.

Kata kunci: Acute Epidural Hematoma, Elderly, Traumatic Brain Injury

INTRODUCTION

Traumatic Brain Injury (TBI) among the elderly population is becoming an increasingly significant global health issue as the aging population grows. According to the World Health Organization (WHO), falls are the second leading cause of unintentional injury deaths globally, with older adults particularly at risk due to age-related physical and cognitive impairments (WHO, 2018). Acute epidural hematomas (AEDH), though rare in this demographic, present unique challenges due to the strong adhesion of the dura mater to the cranial bones in older adults, which generally reduces the likelihood of hematoma formation. However, when AEDH occurs, it often leads to severe complications requiring prompt intervention (Kocabiçak et al., 2010; Yang et al., 2021).

In Indonesia, TBI cases are on the rise, with head injuries accounting for a significant portion of trauma-related emergency visits. South Sulawesi records the highest prevalence of head injuries at 12.8%, while Jambi reports the lowest at 4.5% (CDC, 2014; Niryana et al., 2020). These statistics underline the pressing need to address geriatric head injuries as a public health priority, considering the increased vulnerability of older adults to complications stemming from comorbidities like hypertension and balance disorders (Pavlovic et al., 2019).

The elderly population faces unique risks, as falls are the primary cause of head injuries in this age group, contrasting with traffic accidents, which are more prevalent among younger individuals (Yang et al., 2021). The delay in recognizing AEDH in geriatric patients can result in irreversible neurological damage. This underscores the necessity for timely diagnosis and targeted management to mitigate adverse outcomes (Stippler, 2016).

Despite significant advancements in understanding TBI, research focusing on AEDH among elderly populations remains sparse. Most available studies emphasize younger demographics, leaving a gap in knowledge regarding injury patterns, treatment modalities, and prognostic factors unique to older adults (Zigouris, 2022). Addressing this gap can lead to more effective clinical protocols and better outcomes for geriatric patients.

Previous studies highlight age-related differences in AEDH. For example, AEDH in the elderly often occurs in the parietotemporooccipital region, attributed to the weakened dura mater attachment in these areas (Stippler, 2016). Research by Pavlovic et al. (2019) and Zigouris (2022) emphasizes the need for geriatric-specific management strategies, as timely interventions significantly improve survival rates. The CDC also highlights the global burden of TBI, urging healthcare systems to adapt to the specific needs of vulnerable populations (CDC, 2014; WHO, 2018).

This research aims to investigate the injury patterns and mechanisms of acute epidural hematomas (AEDH) in elderly populations, providing a deeper understanding of how these injuries

manifest in this age group. Additionally, it seeks to assess the differences in AEDH presentation between geriatric and younger patients, highlighting age-specific characteristics that may influence diagnosis and treatment. Furthermore, the study intends to propose tailored management protocols for AEDH in the elderly, with the goal of improving clinical outcomes and ensuring that treatment approaches are optimized for this vulnerable demographic.

The findings from this research are anticipated to offer several benefits. From a clinical perspective, the study aims to enable early recognition and timely intervention for AEDH in elderly patients, reducing the risk of complications. In terms of policy implications, the research supports the development of age-specific traumatic brain injury (TBI) prevention programs that address the unique needs of older adults. Lastly, the study is expected to enhance care protocols by informing healthcare practitioners about geriatric-specific management strategies, thereby improving the quality of care provided to elderly patients with AEDH. These insights collectively contribute to better health outcomes and quality of life for this growing segment of the population.

CASE REPORT

A 66-year-old male patient was admitted to the emergency room with the complaints of persistent headache, nausea, and tendency to sleeping. He had a history motor vehicle accident 3 days ago. He didn't have any spesific history besides this. At physical examination, he had a just soft tissue swelling at right frontotemporal region. At neurological examination, he was conscious orientated-cooperated, moderately prone to sleeping and agitated. His pupils were anisochoric (4ml/3ml) and didn't have facial asimetry. He had sign of lateralisation to the left. Glasgow Coma Score (GCS) was 15. Other system examinations didn't show any abnormality. Cranial Computerized Tomography (CT) showed AEDH at the right parietotemporooccipital region estimated volume 129 cc, width 4,6 cm with midline shift 0.5 cm to the left. (Fig. 1).



Figure 1. Cranial Computerized Tomography (CT)

The patient was operated. craniotomy was accomplished using horse shoe design incision. AEDH was drained. Postoperatively his GCS was 15 and he was discharged with recommendations.

RESULTS AND DISCUSSION

Acute Epidural Hematome (AEDH) can result from injury to the middle meningeal artery, the middle meningeal vein, the diploic veins, or the venous sinuses. Bleeding from the middle meningeal artery has been considered the main source for Acute epidural hematome⁵. TBIs are attributed to several mechanisms of injury, including falls, motor vehicle or other types of road injuries, sports-related injuries, and interpersonal physical violence or violence by other means (e.g., blast injury). These injury

mechanisms vary by geographical region, socioeconomic factors, age, and sex. Indeed, stratifying by geographical region can illuminate clear differences in injury type and overall burden of disease⁶. Motor vehicle accident was the cause of AEDH in our patient. GCS, age, pupillary abnormalities, associated intracranial lesions, time between neurological deterioration and surgery, and intracranial pressure (ICP) have been identified as important factors determining outcome from AEDH.

AEDH in the elderly is rare. There are only a few studies involving AEDH in geriatric age group. EDH is more common in young people although it does occur in all age groups, but it is rare before the age of 2 years or after the age of 60 years because of tenacious dural attachment to the inner table of the skull in these age groups⁷.

Presentation may range widely from normal mental status to severe intracerebral injury in the elderly although acute deterioration may occur in previously conscious patients⁸. Falls are the main cause of head traumas in the elderly due to the accompanying diseases whereas traffic accidents are the main cause in the other age groups⁶. Therefore, the factors that may explain the good prognosis observed in the elderly are the trauma mechanism and compensatory intracranial behaviour⁹.

In surgical series, EDH are more frequently located in the temporoparietal and temporal regions as compared with other locations. In 2 to 5% of patients, bilateral EDH are found and there seems to be a slight predominance of right-sided EDH over left-sided lesions. In the elderly, most AEDH cases developed in the parietal region, unlike younger patients. This site of predilection can be attributed to the fact that, with increasing age, the dura mater is more loosely attached to the inner table of the parietal bone than elsewhere in the calvarium, and it is therefore more easily detached on impact¹⁰. In our patient AEDH at right parietotemporooccipital regions were the site of involvement

CONCLUSION

Acute Epidural Hematoma (AEDH) in the geriatric population is a rare but potentially life-threatening condition if not treated promptly. In elderly patients, the dura mater tends to adhere more strongly to the inner surface of the skull, which reduces the frequency of AEDH compared to younger individuals. However, trauma, such as motor vehicle accidents, can still cause significant head injuries, as observed in this case. Prompt diagnosis through imaging techniques, such as CT scans, and immediate surgical intervention are crucial for improving clinical outcomes in AEDH cases. In this particular case, the patient, who had AEDH in the parietotemporooccipital region, showed substantial improvement following craniotomy and hematoma drainage. Although geriatric patients may have better prognoses with early treatment, the difference in injury mechanisms, like a higher incidence of falls, should be considered in clinical decision-making.

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