

A DESCRIPTIVE ANALYSIS OF BLUNT ABDOMINAL TRAUMA PATIENTS: A STUDY AT YOWARI REGIONAL PUBLIC HOSPITAL (2021-2023)

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ABSTRAK

Pendahuluan

Dengan berfokus secara khusus pada pasien trauma tumpul perut, penelitian ini bertujuan untuk memberikan wawasan berharga mengenai epidemiologi, presentasi klinis, strategi manajemen, dan hasil dari kelompok pasien trauma tertentu. Oleh karena itu, kami bertujuan untuk mengetahui karakteristik pasien trauma perut di RSUD Yowari Kabupaten Jayapura pada tahun 2021 hingga 2023.

Metode

Penelitian ini dilakukan di Rumah Sakit Umum Yowari, Jayapura, Papua, Indonesia dari Januari 2021 hingga Desember 2023. Penelitian ini menggunakan sebagian dari populasi yang dapat diakses yang memenuhi kriteria inklusi dan eksklusi tertentu, dengan sampel yang dikumpulkan melalui non-probability sampling/sampling berturut-turut secara retrospektif dari rekam medis sampai ukuran sampel yang diperlukan tercapai.

Hasil

Sebanyak 301 orang mengalami trauma tumpul perut selama rentang waktu tiga tahun, dengan 90 kasus didokumentasikan pada tahun 2021, 107 pada tahun 2022, dan 104 pada tahun 2023. Di antara kasus-kasus ini, 264 memerlukan intervensi bedah, dengan 78 operasi telah dilakukan di 2021, 92 pada tahun 2022, dan 94 pada tahun 2023. Secara demografis, terdapat 57 pasien berusia di bawah 15 tahun, 234 pasien berusia antara 15 dan 64 tahun, dan 14 orang berusia di atas 65 tahun. Berdasarkan distribusi gender berdasarkan kelompok umur, terdapat 26 pasien laki-laki di bawah usia 65 tahun, 15, 49 laki-laki berusia 15 hingga 64 tahun, dan 8 laki-laki berusia di atas 65 tahun. Organ yang paling terkena dampaknya termasuk hati (96 kasus) dan limpa (180 kasus), dan organ lain juga terkena dampak dalam 29 kasus. Waktu perjalanan ke rumah sakit bervariasi, dengan 113 pasien tiba dalam waktu kurang dari 10 menit, 130 pasien dalam waktu 10 hingga 40 menit, dan 59 orang membutuhkan waktu lebih dari 40 menit.

Kesimpulan

Limpa adalah organ yang paling sering terkena dampaknya, sementara waktu tempuh ke rumah sakit bervariasi antar pasien. Meskipun ada intervensi medis, data morbiditas menunjukkan 16 kematian selama periode observasi. Studi ini memberikan wawasan berharga mengenai karakteristik dan penatalaksanaan kasus trauma tumpul perut selama jangka waktu tertentu. Penelitian lebih lanjut mungkin diperlukan untuk mengeksplorasi faktor-faktor potensial yang berkontribusi terhadap tren dan hasil yang diamati.

Kata Kunci: Blunt Abdominal Trauma, Morbidity.

ABSTRACT**Introduction**

By focusing specifically on blunt abdominal trauma patients, this study aims to provide valuable insights into the epidemiology, clinical presentation, management strategies, and outcomes of this specific subset of trauma patients. Hence, we aimed to determine the characteristics of abdominal trauma patients at Yowari Regional Public Hospital in Jayapura District from 2021 to 2023.

Methods

This research was conducted at Yowari General Hospital, Jayapura, Papua, Indonesia from January 2021 to December 2023. The study utilized a subset of the accessible population meeting specific inclusion and exclusion criteria, with samples collected through non-probability sampling/consecutive sampling retrospectively from medical records until the required sample size was attained.

Results

A total of 301 individuals who experienced blunt abdominal trauma over a span of three years, with 90 cases being documented in 2021, 107 in 2022, and 104 in 2023. Among these cases, 264 necessitated surgical intervention, with 78 surgeries having been performed in 2021, 92 in 2022, and 94 in 2023. Demographically, there were 57 patients under the age of 15, 234 aged between 15 and 64, and 14 individuals aged over 65. Regarding gender distribution across age groups, there were 26 male patients under 15, 49 males aged 15 to 64, and 8 males aged over 65. Predominantly affected organs included the liver (96 cases) and the spleen (180 cases), with other organs having been impacted in 29 instances. Travel time to the hospital varied, with 113 patients having arrived in less than 10 minutes, 130 in 10 to 40 minutes, and 59 individuals having taken over 40 minutes.

Conclusions

The spleen was the most commonly affected organs, while travel time to the hospital varied among patients. Despite medical interventions, morbidity data indicated 16 fatalities throughout the observation period. This study provides valuable insights into the characteristics and management of blunt abdominal trauma cases over the specified timeframe. Further research may be needed to explore potential factors contributing to the observed trends and outcomes.

Keywords: Blunt Abdominal Trauma, Morbidity.

A. INTRODUCTION

Blunt abdominal trauma remains a significant cause of morbidity and mortality worldwide, with varying patterns of injury and outcomes depending on the population studied and the healthcare resources available.¹ Understanding the characteristics and outcomes of blunt abdominal trauma patients is crucial for optimizing their management and improving clinical outcomes.

Prompt diagnosis and management are imperative for enhancing patient outcomes and reducing mortality rates, although further research is warranted, particularly concerning the use of laparoscopy in cases of blunt abdominal trauma.^{1,2} Epidemiological studies on injury distribution can offer valuable insights into injury patterns and the factors influencing the etiology and treatment of blunt abdominal trauma, especially in regions like Papua. Diagnostic challenges, particularly pertaining to liver injuries, underscore the importance of employing

advanced diagnostic technologies such as CT scans for assessing and managing abdominal injuries.³ Disparities in injury patterns across regions with differing healthcare access and infrastructure underscore the necessity of tailoring blunt abdominal trauma management approaches to individual cases to optimize patient outcomes.³ Based on the aforementioned background, the research question arises regarding the depiction and characteristics of abdominal trauma patients at Yowari Regional Public Hospital in Jayapura District from 2021 to 2023.

The study setting, Yowari Regional Public Hospital, serves as a vital healthcare facility in the region, catering to a diverse patient population with a range of traumatic injuries. By focusing specifically on blunt abdominal trauma patients, this study aims to provide valuable insights into the epidemiology, clinical presentation, management strategies, and outcomes of this specific subset of trauma patients. The period of study, spanning from 2021 to 2023, allows for a contemporary analysis of blunt abdominal trauma cases, taking into account any potential changes in injury patterns, management protocols, or outcomes over this time frame.

The findings of this study are anticipated to shed light on the unique challenges and opportunities in the management of blunt abdominal trauma patients at Yowari Regional Public Hospital, offering valuable insights for healthcare professionals involved in the care of trauma patients. Additionally, the results may serve as a basis for further research, quality improvement initiatives, and the development of evidence-based guidelines aimed at enhancing the care and outcomes of blunt abdominal trauma patients in similar healthcare settings. Hence, we aimed to determine the characteristics of abdominal trauma patients at Yowari Regional Public Hospital in Jayapura District from 2021 to 2023.

B. RESEARCH METHODS

This research was conducted at Yowari General Hospital, Jayapura, Papua, Indonesia from January 2021 to December 2023. The study utilized a subset of the accessible population meeting specific inclusion and exclusion criteria, with samples collected through non-probability sampling/consecutive sampling retrospectively from medical records until the required sample size was attained.

We incorporated individuals who had sought medical care at Yowari Regional Public Hospital between 2021 and 2023 and had been diagnosed with blunt abdominal trauma through clinical evaluations, radiological examinations, or surgical assessments. Encompassing patients of various age brackets and both genders ensured a thorough examination across diverse demographic segments. We specifically included patients who had undergone detailed descriptive analyses as part of their medical assessments and had possessed comprehensive medical records, encompassing diagnostic assessments, imaging findings, and treatment strategies. Furthermore, the inclusion criteria had mandated that patients had provided informed consent for the utilization of their medical data for research purposes. Lastly, individuals who had undergone treatment and had received care for blunt abdominal trauma at Yowari Regional Public Hospital within the stipulated study period had been integrated into the analysis.

The data extraction strategies for the study focused on several key variables related to blunt abdominal trauma cases treated at the hospital. These variables included the type of injury, with a particular emphasis on surgical cases, categorized by age groups (<15 years old, 15-64 years old, and >65 years old) and gender distribution (male). Additionally, data on affected organs were extracted, primarily focusing on injuries to the liver, spleen, and other organs. Travel time to the hospital was also recorded, segmented into three categories: less than 10 minutes, 10 to 40 minutes, and over 40 minutes. Morbidity outcomes, including mortality rates, were documented, along with surgical duration, classified as either less than one hour or over one hour. Furthermore, data from Focused Assessment with Sonography for Trauma (FAST-US) procedures performed as part of the diagnostic process for blunt abdominal trauma cases were included. These comprehensive data extraction strategies aimed to provide a detailed analysis of various factors influencing patient outcomes and management in cases of blunt abdominal trauma.

In the descriptive study conducted on blunt abdominal trauma cases at Yowari Regional Public Hospital between 2021 and 2023, various data analysis strategies were employed to comprehensively characterize the patient population and their outcomes. Initially, descriptive statistics were calculated to outline the basic demographic features, such as age distribution categorized into three groups (<15 years old, 15-64 years old, and >65 years old), and gender distribution focused on males. The severity and nature of injuries were examined by analyzing the frequency and distribution of affected organs, including the liver, spleen, and other organs. Surgical interventions were thoroughly assessed, considering the types of surgeries performed, their durations, and associated outcomes such as mortality rates. Moreover, the impact of travel time to the hospital on patient outcomes was explored, alongside an evaluation of the diagnostic utility of Focused Assessment with Sonography for Trauma (FAST-US) procedures. Morbidity and mortality rates were calculated, providing insight into patient prognosis and potential risk factors. Additionally, temporal trends in blunt abdominal trauma cases over the study period were investigated, while multivariate analysis may have been conducted to identify independent predictors of outcomes.

C. RESULTS AND DISCUSSION

Results

A total of 301 individuals who experienced blunt abdominal trauma over a span of three years, with 90 cases being documented in 2021, 107 in 2022, and 104 in 2023. In the years 2021, 2022, and 2023, monthly occurrences of a specific variable were documented. January saw 9, 10, and 10 instances respectively during these years. February consistently recorded 6 occurrences across the three-year period. March witnessed 8 instances in 2021, 9 in 2022, and 7 in 2023. April documented 7 occurrences in 2021, 10 in 2022, and 8 in 2023. May registered 10 occurrences in 2021 and 9 in both 2022 and 2023. In June, there were 7 occurrences in 2021 and 2022, while 10 instances were noted in 2023. July documented 7 instances in 2021, 9 in 2022, and 8 in 2023. August recorded 6 occurrences in 2021, 11 in 2022, and 7 in 2023. September observed 7 instances in 2021, 11 in 2022, and 9 in 2023. October saw 6 occurrences

in 2021, 7 in 2022, and 10 in 2023. November had 9 occurrences in both 2021 and 2022, and 10 in 2023. Lastly, December recorded 8 occurrences in both 2021 and 2022, and 10 in 2023.

Among these cases, 264 necessitated surgical intervention, with 78 surgeries having been performed in 2021, 92 in 2022, and 94 in 2023 (**table 1**). Demographically, there were 57 patients under the age of 15, 234 aged between 15 and 64, and 14 individuals aged over 65. Regarding gender distribution across age groups, there were 26 male patients under 15, 49 males aged 15 to 64, and 8 males aged over 65. Predominantly affected organs included the liver (96 cases) and the spleen (180 cases), with other organs having been impacted in 29 instances. Travel time to the hospital varied, with 113 patients having arrived in less than 10 minutes, 130 in 10 to 40 minutes, and 59 individuals having taken over 40 minutes. Morbidity data indicated 16 fatalities throughout the observation period. Analysis of surgical duration revealed that 270 procedures lasted less than an hour, while 29 lasted longer. Additionally, FAST-US was performed in all cases.

Discussion

Blunt abdominal trauma displays a notable male predominance, consistently observed in various studies, with younger age groups, particularly adolescents aged 13-18, bearing a disproportionate burden of such injuries. However, our study in rural Papua, presents a departure from this norm, revealing a majority of cases within the 15-64 age bracket, constituting 77% of the total, and a distinctively high proportion among males within this age range. This unique demographic distribution highlights the contextual variability in injury patterns within rural settings. Common mechanisms contributing to blunt abdominal trauma include road traffic accidents, falls from height, and work-related injuries.^{4,5} Understanding the specific demographics and etiological factors associated with such trauma is critical, particularly considering the potential for severe complications and adverse outcomes. This insight is invaluable for developing targeted prevention strategies and optimizing management approaches, especially in resource-constrained settings like rural Papua, Indonesia.⁶

The time taken for patients to reach the hospital after sustaining blunt abdominal trauma plays a crucial role in their management and outcomes. The prolongation of hospital arrival subsequent to such trauma can result in heightened rates of morbidity and mortality.⁷⁻⁹ For example, a majority of patients arrived at the hospital within 7-24 hours of sustaining blunt abdominal trauma, often due to road traffic accidents. This delay in seeking medical care can result in complications such as bleeding from solid organs or vascular injuries, underscoring the importance of timely management.^{10,11} The majority of patients in our cohort arrived at the hospital within a 10-minute travel time window, accounting for 40% in 2021, 38.3% in 2022, and 34.6% in 2023, with an overall percentage of 37.5%. Patients arriving within a travel time of 10 to 40 minutes comprised 38.9% in 2021, 42.1% in 2022, and 38.5% in 2023, contributing to 42.9% overall. Conversely, those with travel times exceeding 40 minutes constituted 21.1% in 2021, 19.6% in 2022, and 26.9% in 2023, resulting in an overall percentage of 19.6%.

Solid organs such as the liver and spleen are commonly affected in cases of blunt abdominal trauma.^{12,13} Our study found that liver emerged as a commonly affected organ, with

percentages of 30%, 30%, and 33.7% in 2021, 2022, and 2023 respectively, contributing to an overall percentage of 31.2%. Liver injuries are particularly prevalent and can lead to fatal outcomes. While injuries to the small bowel following blunt trauma are considered rare. The severity of associated injuries often determines the morbidity and mortality in cases of blunt abdominal trauma.¹⁴ Delay in managing blunt abdominal trauma can significantly increase morbidity and mortality rates, especially due to bleeding from solid organs or vascular injuries.¹⁵ Early diagnosis and prompt treatment are crucial in saving lives.

Efforts to mitigate morbidity and mortality stemming from blunt abdominal trauma are emphasized in various studies, highlighting the necessity for timely management and intervention to address complications such as bleeding from solid organs or vascular injuries^{3,16}. Early detection of injuries like bowel transections is critical in reducing patient morbidity and mortality. Furthermore, predictive factors such as the glucose-potassium ratio have been proposed to assist in anticipating outcomes in patients with blunt abdominal trauma.¹⁷ In our dataset, morbidity data revealed that 8 patients (8.9%) died in 2021, followed by 4 patients (3.8%) in both 2022 and 2023, resulting in a total of 16 deaths (5.3%) across the study period. In terms of surgical duration, the majority of procedures lasted less than 1 hour, with percentages of 87.8%, 93.5%, and 87.5% in 2021, 2022, and 2023 respectively, accounting for 89.7% overall. Conversely, surgeries lasting more than 1 hour were less common, with percentages of 12.2%, 6.5%, and 12.5% in 2021, 2022, and 2023 respectively, resulting in a total of 31 procedures (10.3%) exceeding 1 hour in duration over the study period. Delayed diagnosis and treatment of injuries, such as intestinal perforations, can lead to worse outcomes, emphasizing the significance of swift examination and identification of abdominal injuries.^{18,19} Additionally, the presence of associated injuries has been shown to increase morbidity and mortality rates in cases of blunt abdominal trauma.

We identified a range of stakeholders and presented policy suggestions derived from its observations on blunt abdominal trauma. These stakeholders comprised hospital administration, medical personnel, government health authorities, public health agencies, community advocacy groups, insurance providers, and academic and research institutions.²⁰ The policy recommendations proposed encompassed enhancing trauma prevention initiatives through collaboration with public health agencies and community advocates, refining emergency medical services (EMS) by bolstering systems and infrastructure, allocating resources for surgical services to address intervention requirements, and formulating age-specific and organ-specific treatment protocols.²¹ Additionally, it was suggested to advocate for the promotion of FAST-US training among healthcare professionals for the prompt detection and management of abdominal injuries, instituting review mechanisms for morbidity and mortality to foster ongoing quality enhancement, and campaigning for research funding to facilitate further investigations into trauma management and associated outcomes.^{20,21} These policy proposals aim to cater to identified needs and bolster the overall management of blunt abdominal trauma at Yowari Regional Public Hospital, thereby positively impacting patients and the healthcare system at large.

D. CONCLUSION

In conclusion, this study analyzed the demographic characteristics and trends of blunt abdominal trauma cases spanning from 2021 to 2023 at Yowari Regional Public Hospital. A total of 301 cases were documented during this period, with an increasing trend observed from 2021 to 2023. Monthly occurrences of the trauma varied across the years, with slight fluctuations in the number of cases observed each month. Surgical intervention was necessary for 264 cases, with the number of surgeries performed each year also showing an increasing trend. The demographic analysis revealed a distribution of cases across different age groups and genders, with the majority of cases affecting individuals aged between 15 and 64. The spleen were the most commonly affected organs, while travel time to the hospital varied among patients. Despite medical interventions, morbidity data indicated 16 fatalities throughout the observation period. Surgical duration analysis showed that the majority of procedures lasted less than an hour. Overall, this study provides valuable insights into the characteristics and management of blunt abdominal trauma cases over the specified timeframe. Further research may be needed to explore potential factors contributing to the observed trends and outcomes.

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