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Forensic Autopsy of Multiple Stab Wound

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ABSTRACT

Introduction: Stabbing is the predominant form of homicidal violence globally, resulting in both physical impairment and death. A stab wound is the result of a forceful push from a sharp or blunt pointed object, resulting in a wound that is deeper than it is length.

Case presentation: We present a case of a man who was found dead after being stabbed with a sharp weapon by his partner in a public area, with an open wound on the left chest. A forensic expert identified the body at Dr. Soetomo General Hospital, Surabaya, Indonesia. On external examination, we found 23 open wounds on several anatomical regions. Vital injuries include an open wound on the right side of the neck and the back of both sides of the chest. In an internal examination, we found both lungs looked shrunken, and blood was found in the right and left chest cavities. The stab wound to the right back penetrated the right lower lung and right liver lobe. The stab wound to the left back penetrated the lower left lung.

Conclusion: A complete autopsy is vital to determine the cause, mechanism, and manner of death and to reconstruct the events before death.

1. Introduction

Murder is the act of one individual unlawfully taking away another person's right to live.¹⁻³ The process of law enforcement and justice is a scientific pursuit, rather than relying solely on common sense and non-science methods.⁴ Therefore, the involvement of physicians with expertise in medicolegal and forensic medicine is crucial to ensuring justice in matters related to the human body, health, and life. Providing evidence is inherently linked to the challenge of identifying objective reality. Under Article 184 of the Indonesian Criminal Procedure Code, the presentation of evidence in criminal proceedings necessitates the presence of credible evidence, such as testimonies from witnesses, expert opinions, written

correspondence, directives, and statements from the accused.^{5,6} This case report was aimed to present a forensic autopsy of multiple stab wound.

2. Case presentation

In April 2021, a man was discovered deceased as a result of mistreatment inflicted by his partner at a sports club in Surabaya (Figure 1). There were a multitude of blood stains. A forensic specialist verified the identity of the deceased at Dr. Soetomo General Hospital and performed comprehensive examinations, including exterior, internal, and laboratory tests.

The external inspection determined that the deceased individual was a man, aged between 40 and 50 years old, with a body length of 166 centimeters

(cm), a weight of 90 kilograms (kg), olive skin tone, and signs of excessive nutrition. Resisting stiffness in the lower jaw and upper and lower limbs is a difficult challenge. The mucous membranes of the eyelids, lips, gums, fingers, and nails have a pallid appearance. The back of the left hand had many abrasions accompanied by bruising. We discovered a total of 23 exposed injuries, distributed throughout various regions of the body. The patient has a significant injury consisting of a 3 cm × 3 cm open wound on the right side of the neck, with a muscle wound at its base. The left chest had two open wounds, each measuring 2 cm x 1.5 cm and 1.5 cm x 1.5 cm, with a muscle wound foundation. Upon examination, the medical team discovered a total of 11 open wounds on the person's back. Two of these wounds were particularly significant, measuring 1.5 cm x 1 cm in the muscle base on the left side and 2.5 cm x 1 cm in the base of the muscle wound on the right side (Figure 2).

We performed a direct incision with a *letulle en masse* dissection to conduct an interior inspection. This technique entails the simultaneous removal of nearly all internal organs. According to the authors, this method of removing the internal organs is the most often used in autopsies conducted for legal purposes. Assistance may be necessary depending on the prosecution, and this approach involves quickly extracting all organs from the body simultaneously; however, the dissection process may be time-consuming. All the connections and associations

between the organs remain undisturbed. The one disadvantage of this approach is the massive assemblage of organs positioned externally for dissection. Occasionally, those without expertise in employing this technique may find it to be a highly time-consuming task.⁷⁻⁹

A penetrating injury was discovered on the neck, namely in the right internal jugular vein, resulting from a knife wound to the right side of the neck. There was blood infiltration in multiple areas, including the left neck muscle due to a stab wound, the upper left chest muscle as a result of a stab trauma to the left shoulder, and the third intercostal muscle. A stab wound to the left chest caused blood seepage in the left chest (Figure 3). Upon examination of the thoracic cavity, we observed that both lungs are smaller in size. The right chest contained 400 ml of blood, whereas the left chest cavity contained 450 ml. The stab wound on the right side of the back entered the 12th intercostal space, measuring 2 cm x 1 cm. It then penetrated the lower right lung, also measuring 2 cm x 1 cm, and finally entered the right lobe of the liver, measuring 1.5 cm x 0.5 cm. The stab wound on the left side of the back entered the 10th intercostal space, measuring 2 cm x 2 cm. It subsequently reached the lower left lung, also with a wound size of 2 cm x 2 cm. Upon examination of other organs, the spleen appeared atrophied, while the brain had a pallid appearance.



Figure 1. Crime scene.

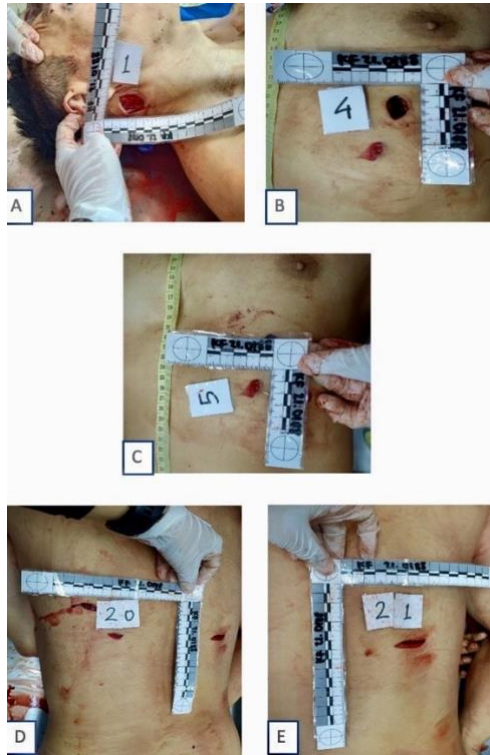


Figure 2. Fatal wounds on external examination: Open wound on the right neck (A); Open wound to the left chest (B & C); Open wound on the left back (D); Open wound on the right back (E).

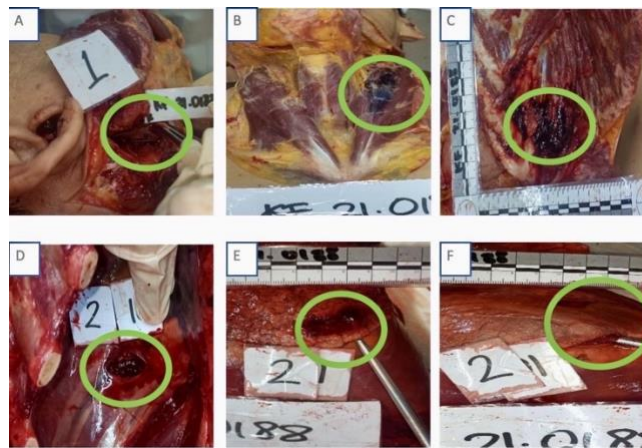


Figure 3. Internal examination. Internal jugular vein of the right neck was torn (A); Blood infiltration in the left neck (B); Blood infiltration in the 10th and 11th intercostal muscles of the left chest (C); Stab wound to the right back that penetrated the 12th intercostal space behind (D); Penetrating wound to the lower right lung (E); Penetrating wound to the liver (F).



Figure 4. Weapons used by the perpetrator with a weapon width of 2 cm and a length of 15 cm: the state of the knife after straightening (A); the state of the knife when it was found (B).

3. Discussion

Acts of sharp violence involve the use of items possessing sharp qualities to inflict harm.¹⁰⁻¹² A lack of tissue bridges is a distinguishing feature of wounds inflicted by sharp instruments. Stab wounds can have a wound length in the skin that is either equal to, smaller than, or larger than the breadth of the weapon. A stab wound exceeds the breadth of the knife. The knife entering the skin draws its point across, resulting in a cut.¹³ The thoracic cavity houses several essential organs, such as the heart and the lungs. Therefore, the heart, lungs, and major blood vessels are at a higher risk of sustaining injury if a severe force enters the chest cavity and reaches the essential organs.^{14,15}

The external examination findings indicated pallor in the upper and lower eyelids of both eyes, as well as in the mucous membranes of the mouth, hands, and nails. The individual has open wounds (stab wounds) on the right and left sides of their back. The wounds have flat edges and sharp angles, with no tissue connecting them. The wounds have penetrated the muscles and organs underneath, with a depth of 9 cm on the right side and 5.5 cm on the left side.

The victim sustains injuries while still living (antemortem), which may be attributed to the physiological response to damage. As long as the person's heart is functioning, copious bleeding occurs due to the continuous pumping of blood through the wound. An estimated volume of 400 mL of blood filled the right thoracic cavity, causing the collapse of the lungs. We observed a penetrating injury in the lower lung, which also extended into the right lobe of the

liver. The wound penetrated the lower lung, resulting in the detection of 450 mL of blood within the left thoracic cavity. If there is bleeding from the back on both the right and left side, as well as puncture wounds to the lungs and liver, fluid could enter the thoracic cavity through any opening that is available.²

It is important to mention that the victim had a stab wound to the neck that caused a tear in the jugular vein. This additional stab wound significantly contributed to expediting the process of death.^{7,8} According to the authors, the victim had a higher body weight than average and had a height of 166 cm. The recommended maximum body weight should not surpass 70 kg, equivalent to a blood volume of 5 liters. Here, the victim's weight was 90 kg, and the estimated blood volume was 6300 mL (calculated by multiplying the weight by 7%). Based on Advanced Trauma Life Support guidelines, the fatal amount of blood loss in this particular situation was 40% of the overall blood volume, which equated to 2520 mL.

4. Conclusion

The main duties of the forensic pathologist revolve around delivering a concise and accurate description of the injury, including factors such as its position, size, number, pattern, direction, evaluation of internal damage, and determination of the cause of death. The forensic pathologist has conclusively found the offender guilty of contravening Article 338 of the Indonesian Criminal Code, which stipulates that "any individual who intentionally causes the death of another person, or threatens to do so, shall be subject to a maximum imprisonment of fifteen years."

5. References

1. Parlindungan V, Rahayu P, Solichin S. Medico-legal neck stab wound on deadly masseuse: a case report. *Malaysian J Med Health Sci.* 2021;17:180-2.
2. Heckmann V, Engum V, Simon G, Poor VS, Toth D, et al. Piercing the surface: a mechanical analysis of stabbing with household tools. *J Forensic Sci.* 2023;68(4):1218-27.
3. Saukko P, Knight B. *Knight's Forensic Pathology.* 4th ed. Boca Raton: Chapman and Hall/CRC.2015. p.461-73.
4. Ben Abderrahim S, Turki E, Haddaji A, Ghzel R. Criminal death by stabbing in the region of Kairouan, Tunisia: a retrospective study, 2008–2018. *Tunis Med.* 2021; 99(12): 1167–73.
5. Nolan G, Hainsworth SV, Ruddy GN. Forces generated in stabbing attacks: an evaluation of the utility of the mild, moderate and severe scale. *Int J Leg Med.* 2018; 132(1): 229–36.
6. Gitto L, Serinelli S, Werner FW, Ordway NR, Stoppacher R. Determination of force required to produce stab wounds in cadaveric chest tissues. *Am J Forensic Med Pathol.* 2021; 42(4): 318–23.
7. Annaidh AN, Cassidy M, Curtis M, Destrade M, Gilchrist MD. Toward a predictive assessment of stab-penetration forces. *Am J Forensic Med Pathol.* 2015; 36(3): 162–6.
8. Hogue M, Fairgrieve SI, Lievers WB. Stabbing angle alters peak force and work during sharp force trauma of porcine ribs. *Forensic Sci Int.* 2020; 314:110373.
9. Bolliger SA, Kneubuehl BP, Thali MJ, Eggert S, Siegenthaler L. Stabbing energy and force required for pocket-knives to pierce ribs. *Forensic Sci Pathol.* 2016; 12(4): 394–8.
10. Sloan K, Robertson J, Fergusson M, Spratford W. An evaluation of human stabbing performance to inform the standardisation of textile damage examinations: do simulation trials correlate to reported stabbings? *Forensic Sci Int.* 2020; 312:110305.
11. Celik C, Cetinkaya TA, Ata U, Kamalak M, Saka NE. Penetrating two stab to the throat, survival time and physical mobility: a suicide case and literature review. *Egyptian J Forensic Sci.* 2023;13:54.
12. Lupi-Manso N, Ribeiro IP, Inácio AR Sharp force fatalities: differentiating homicide from suicide through a retrospective review (2012–2019) of autopsy findings in Lisbon (Portugal). *Forensic Sci Int.* 2021;327:110959.
13. Lee YJ, Kim HJ, Kang HT, Lee SW, Park KN Clinical characteristics of neck stab wounds: a single-institute retrospective study of 89 patients. *Korean J Otorhinolaryngol-Head Neck Surg.* 2020;64(4):247-51.
14. Stassi C, Mondello C, Baldino G, Benedetto F, La Corte F, Salamone I, et al. Unusual attempted suicide or covered attempted homicide? A neck stabbing case report and review of literature. *Int J Legal Med.* 2021; 135(2):555–9.
15. Vrinceanu D, Banica B, Papacoea R, Papacoea T Self-inflicted laryngeal penetrating wounds with suicidal intention: two clinical cases. *Rom J Leg Med.* 2018; 26:16–20.