

STAB WOUND ON CHEST

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ABSTRACT

Background: Trying to figure out how someone died is difficult. Identifying whether a death was caused by suicide, an accident, or a homicide during the first stages of an inquiry is one of the most challenging tasks for a forensic expert and medical staff.

Aim: The research aims to analyse the stab wound on chest through the lungs.

Method: A case was reported. A corpse known by the initials BS which based on the visum request letter dated September 08, 2020, No.K/04/IX/2020/Reskrim on behalf of Binjai Resort Police. On September 08 2020 at 21.00 Western Indonesia Time at the Forensic Room of the Djoelham Hospital, carried out external examination of the corpse and continued internal examination on September 8, 2020 at 22.05 Western Indonesian Time.

Findings: Head and neck stab wounds are uncommon. The stabbing wound on the left chest is the most hazardous. The tendency is for someone to penetrate the left chest. Furthermore, a murderous person will stab themselves in the left chest. People believed the sufferer would pass away sooner because the majority of the heart is on the left side of the chest.

KEYWORDS

lungs, chest, stab wounds

INTRODUCTION

An injury can be defined as the damage to body tissue that caused by a trauma. There are various causes of injury, namely: caused by gunshots, electric currents, contact with blunt objects, objects sharps, chemicals, and so on. Criminal acts accompanied by sharp weapons often occur. This is often related to the ease of obtaining sharp weapons everywhere. By having sharp weapons murder, suicide, and accidents can happen (Papadakis et al., 2020).

Determining the way of how one's death is a challenge. It is one of the most difficult tasks for a forensic expert and medical personnel in determining whether the death is because of killing self, accident, or homicide as included in the early stages of the investigation death. The difference between homicide, suicide and accidental injury is a central issue in forensic pathology. In addition, the cause of death due to sharps injuries are common and cause the loss of a person's life. Seen from the nature of violence, the hardness of sharp objects is carried out using sharp objects such as knives, axes, razors and etc. Wounds caused by sharp objects can be in the form of stab wounds, cuts and iris. Viewed from a medico-legal aspect, the checking of people who suffer violence due to sharp objects, doctors are essentially required to provide clarity of problems such as the type of injury, the type of violence that causes injury and qualification of injury (Olding et al., 2019).

Traumatology is a branch of medicine that studies trauma or injuries and their association with various types of violence (forced weapons) with abnormalities in the body due to tissue discontinuities that leaves a trail (Villalobos et al., 2020).

Sharp trauma is one type of trauma which is a division from mechanical trauma. Sharp trauma is an abnormality in the body caused by the contact of an object with surface capable of slicing so that continuity network disappears. It is usually caused by swords, scissors, razors, axes and etc. Injuries caused by sharp trauma can cause cuts, stab wounds and stab wounds.

The general characteristics of a sharp object wound are (Salsabila, 2022):

- a. The outline of the wound is usually regular, the edges are even, and the angle is sharp.
- b. If connected, they will be tight because these things are only separates, and it does not destroy the network and forms a straight line from a slight bend.
- c. No network bridge.
- d. There is no bruising in the area around the wound line.

One of the most common is a stab wound. A stab wound is an injury on the body caused by stabbing objects that have sharp edges on the body. Stab wounds can be distinguished from iris wounds based on their length and size wound depth. When measured, the puncture wound has the depth of the wound which is longer than the length. On the other hand, in iris wounds, the angle of the wound can indicate an approximate object cause, whether it is a one-edged or double-edged knife. If one corner of the wound is acute and the other is blunt, meaning that the object causing it is a one-edged sharp object. When Both angles of the wound are sharp, the wound can be caused by a sharp-edged object two (Petrus, 2021). Injuries can occur on the chest, abdomen, spine, neck, head and neck extremity. Stab wounds to the head and neck are rare. Stab wounds to the neck can cause rapid death because bleeding, air embolism or asphyxia caused by bleeding great soft tissue with compression pressure on the trachea and blood vessels neck. The victim can die from severing the carotid artery, jugular vein, pharynx and trachea (Zhao et al., 2021).

The most dangerous stab wound is on the left chest. Someone will tend to pierce the left chest. Moreover, if someone who intends to kill, then that person will stab at the left chest, this is because most of the heart is located in the left chest so that the person think the victim will die faster. The stab wound to the chest will result in serious, life-threatening heart injury. Stab wound on the right chest usually injure the right ventricle, aorta, or right atrium. And on the left chest usually injure the right ventricle. In stab wounds, damage atria can be more serious than ventricular damage due to muscle ventricles can still contract, which can slow or end bleeding.

Puncture wounds to the spine are rare. Like a stab wound head, the knife used can break and bone fragments are found behind. Injury to the spinal cord can cause paralysis. Stab wounds to the abdomen can cause damage to the liver, spleen, stomach, pancreas, kidneys, urinary bladder, intestines so that it can cause quite a lot of bleeding. Death does not occur directly on the wound stab in the abdomen. The fact is that it's only been a few days or even weeks of injury stab can cause death (Alfred et al., 2020).

Stab wounds to the extremities can lead to death as well. Prick can extremity vessels such as the femoral artery. In almost these cases, the victim was stabbed while consuming alcohol and didn't realize that is suffering from a stab wound.

Wound Characteristics

a. Length and depth of wound

In stab wounds, the length of the wound on the skin can be the same, smaller or larger compared to the width of the blade. Most stab wounds will open not because of the nature of the things that enter but as a result elasticity of the skin. In certain parts of the body, where there is a base in the form of bone or muscle fibers, the wound may appear as a curve. The length of the wound is important to measure by closing the two edges of the wound, because that's why will represent the width of the tool. The length of the wound on the surface of the skin looks smaller of the width of the tool, especially if the wound is transverse to the muscle. When the wound enters and out through the same groove then the width of the wound is equal to the width of the tool. It frequently happens that the width of the wound exceeds the width of the tool due to sideways pulling piercing time and pulling time. Likewise, it happens if the incoming tool enters the network with a tilted position (Payne-James et al., 2018).

b. Wound Shape

The shape of the wound on a stab wound can be affected by the shape and size of the weapon used, direction of thrust, movement of the weapon on the wound, movement of the victim punctured, and the state of skin elasticity. The wound margin area can provide information on the sharpness of the weapon used. A blunt weapon for example will experience abrasion. The edges of the wound can show sharp parts (an acute angle) and an obtuse (obtuse angle) of a single-sided sharp-edged knife.

A knife with both sharp edges will produce a cut with sharp edges. There are several factors that affect the shape of a stab wound, one of which is: is the victim's reaction when stabbed or when the knife comes out, it can be causing the wound to be less characteristic. Or manipulation done at the time of stabbing also affects. Some of the wound patterns that can be found that is (Yudianto, 2020):

1. Stab in which is then partially ejected, and then reinserted through a different channel. In that situation, the wound does not match the usual picture and more than one channel. It can be found in deeper tissues and organs.
2. The puncture is then removed by directing it to one of the angle, so that the wound that is formed is wider and gives a wound to the surface of the skin like a tail.
3. The stab goes in then while it is still inside and it is stabbed in the other direction, so that the wound channel becomes wider. Visible external wounds are also more area compared to the width of the weapon used.
4. Puncture in which it is then removed by using the dot deepest as an anvil, so that the wound channel is narrow at the deepest point and widest superficially. So that the external wound is bigger compared to the width of the weapon used.
5. The stitch rotates on in, out, or both. Wound angle is large and irregular in shape.

Puncture Wound Examination

On examination of the wound, there are two types of wounds due to sharp instruments that need to be carefully considered and have recognizable characteristics from the action victims, namely signs of trials and wounds of resistance. Both have the form location and

medicolegal. The test mark is a shallow incision. A stab wound is made before fatal injuries by individuals contemplating suicide. Trial wound is often parallel and located close to the wound in the area of wrist or neck. Other forms of superficial stab wounds near deep and deadly stab wounds. Another form of injury due to an instrument that sharp is a “resistance wound”. This type of wound can be found on the fingers, hands, and forearms of the victim as he tries to protect himself from swing of a weapon, for example by grasping the blade of a sharp instrument. In examination, the interpretation of the wound should be based on findings and findings should not be influenced by patient or family information. Inspection intended to determine:

- a. Number of wounds
- b. Wound location
- c. Wound direction
- d. Wound size (length, width and depth)
- e. Estimating injuries as the cause of the victim's death or not
- f. Estimating the way in which injuries occur, whether homicide, suicide, or accident.

The location of the wound is described by connecting the affected areas adjacent to the anatomical line of the body and the position of certain tissues, for example the line in the middle of the body, the catia, the nipple, the center, the joints and others.

Causes of Death

In stab wounds, the cause of death is divided into two, namely direct and indirect cause. In immediate death, bleeding usually occurs and damage to important organs (heart, liver, large blood vessels, etc.), and air embolism. In cases of indirect cause, the death usually occurs due to sepsis or infection. The most common cause of death in murder caused by a stab wound is heavy bleeding in the large blood vessels. Arterial bleeding from large blood vessels can result in serious death relatively fast. Loss of more than 1 liter of blood from large vessels is fatal.

METHOD

A case was reported. A corpse known by the initials AA which based on the visum request letter dated April 13, 2019, No. VER/53/IV/2019/SPKT-A on behalf of Head of the South Binjai Sector Police. On April 13, 2019 at 15.33 Western Indonesia Time at the Forensic Room of the Djoelham Hospital, an external examination of the body was carried out and continued internal examination on April 13, 2019 at 16.20 Western Indonesia Time.

Examination Result

General Checking

Body Label	: Not found
Body Wrapping	: Not found
Closure of the body	: Long towel with blue nemo motif
Body clothes	: White singlet shirt, color knee-length shorts black jeans material, maroon pants

Stab Wound on Chest

Funeral jewelry : Not found

Objects beside the corpse : Not found

Signs of Death : Decrease in Temperature

General identification : Found the body of a male aged 35 years old, Indonesian nationality, brown skin color, body length one hundred seventy five centimeters.

Specific identification : Nothing

External Checking:

Head : On the head two centimeters from the top corner of the ear and five centimeters from the midline of the body found swelling with a diameter of four centimeters, three centimeters from the top of the right ear and four centimeters from the midline of the body found an open wound with a size of 3 cm x 1 cm

Eyes : no signs of violence

Mouth : no signs of violence

Teeth : Totaling thirty-two from the nostrils, mouth opening, right ear, left ear, pubic and release: nothing came out.

Injuries:

a. On the right chest, 2 cm from the midline of the front of the body and 6 cm from the top of the shoulder found an open wound with a size of 3 cm x 0.5 cm.

b. On the right side of the abdomen, 3 cm from the midline of the body and 12 cm from the nipple found an open wound with a size of 9 cm x 2.5 cm with 1 cm deep.



c. On the inside of the right elbow, 6cm from the wrist and 8 cm from the elbow found an open wound with a size of 8 cm x 5 cm



Others:

The skin tissue of the upper and lower lips is bluish

Stab Wound on Chest

The tissue under the fingernails of both hands and toes looks colored bluish.

CHECKING CHEST:

Chest skin opening: chest fat thickness 0.5 cm The opening of the pectoral muscles: between the sixth and seventh ribs intersects the line In the middle of the body there is an open wound with a length of 2 cm x 0.6 cm.

Breastbone opening:

- There is no blood absorption
- On palpation found adhesions found third rib adhesions and four
- Found red fluid in the chest cavity as much as 1 liter

HEART

Found a heart weight of 300 grams.

- At the opening of the pouch, there is an open wound in the pouch heart with a length of 3 cm x 1 cm
- On the left heart muscle, there is an open wound with a size of 2 cm x 0.5 cm

Lung examination : an open wound was found in the lower left lung with a size of 2.5 cm by 0.5 cm.

On abdominal examination:

- 0.1 cm thick belly fat
- On the right abdomen found an open wound penetrating the abdominal muscles.
- In the lower right abdomen found a blood infiltration with a size of 3 cm x 1 cm

RESULTS AND DISCUSSION

Based on the literature review, case reports above and based on the results of the investigation at the scene of the case, it is found that the victim was dead. From these results, there is an alleged action violence against the victim, therefore the investigator through a letter visum request sent to Djoelham Binjai Hospital at the Forensic Installation of the Djoelham Binjai Hospital. The examination of the victim was carried out by a forensic doctor who was on duty at the Djoelham Binjai Hospital on the same day, and from the results of the examination, it is found: 1) There are corpse clothes, white singlets, black knee-length shorts made of jeans, maroon pants. There are open wounds on the top of the head and the right side of the head. 2) There is no tissue bridge, regular wound edges, and the base of the wound the wound is bone, this indicates that the wound is a wounds caused by sharp objects. 3) There is an open wound on the chest where this wound shows the edges of the wound flat, the upper corner of the wound is blunt, the lower corner of the wound is acute, and if both edges of the wound If you close it, it will look like its original shape. These are the characteristics from wounds caused by sharp objects. In this wound the depth of the wound can determine the type of object used. In this case there is the depth of the wound is 1 cm where this indicates the length of the tool used is 2 cm, which means the victim suffered a stab wound to the chest. An open wound in the sac of the heart that penetrates the heart. Found 1 liter of red fluid in the

chest cavity. This happened as a result of accumulation of blood fluid that comes out of the heart and lungs due to injury the stab experienced by the victim so that blood fills the chest cavity which can be causes the victim to experience respiratory failure due to the hemothorax experienced victim. Hemothorax is a condition in which blood accumulates or fill the chest cavity due to the occurrence of a heavy bleeding in the chest cavity an organ in the chest cavity.

Medicolegal Aspect

In conducting examinations of living or dead victims who suffer injuries due to violence, in essence doctors are required to provide clarity regarding the type of injury that occurred, the type of violence/weapon or object causing the wound and the degree of injury.

In this case, the suspect is not yet known, but there are several articles from criminal law that may be imposed on the suspect/perpetrator as:

Article 338 of the Criminal Code, Whoever deliberately takes the life of another person, threatened with murder with a maximum imprisonment of fifteen years.

Article 339 of the Criminal Code, Murder which is followed, accompanied or preceded by a criminal act, which is committed with the intent to prepare or facilitate its implementation, or to disengage oneself or other participants from criminal if caught red-handed, or to ensure possession of the goods obtained illegally, is threatened with life imprisonment, or imprisonment for a certain period of twenty years old.

Article 340 of the Criminal Code, Whoever intentionally and with prior plans used to take other people's lives, was threatened with murder with plan, with the death penalty or imprisonment for life or for certain period, a maximum of twenty years.

CONCLUSION

Based on the literature review, case reports and discussion above, it can be concluded as follows:

- a. Estimated time of death is between 12 hours - 24 hours before external checking is done.
- b. The victim died in an unnatural way.
- c. The cause of death was a stab wound to the chest that pierced the heart in lower left and the heart sac, causing excessive bleeding due to sharp trauma.

REFERENCES

- Alfred, I. M. P., Dibert-Bekoy-Nouganga Emmanuel, N. D., Rodrigue, M., & Martial, D. D. A. (2020). Penetrating wounds of the abdomen by stabbing: selective abstention and results at the Community University Hospital Center of Bangui. *The Journal of Medical Research*, 6(1), 25–28.
- Olding, J., Olding, C., Bew, D., & Fan, K. (2019). Penetrating head & neck trauma—Epidemiology and injury characteristics in terror-related violence, interpersonal violence and deliberate self-harm at a level 1 trauma centre. *The Surgeon*, 7(3), 133–138.
- Papadakis, S. A., Pallis, D., Galanakis, S., Georgiou, D. F., Kateros, K., Macheras, G., &

- Sapkas, G. (2020). Falls from height due to accident and suicide attempt in Greece. A comparison of the injury patterns. *Injury*, 5(2), 230–234.
- Payne-James, J. J., Stark, M. M., Butler, B., & Seymour, C. (2018). So you want a career in forensic and legal medicine? *British Journal of Hospital Medicine*, 7(3), C38–C41.
- Petrus, A. (2021). Aspek Medikolegal Korban Luka Akibat Trauma Tumpul. *Anatomica Medical Journal/ AMJ*, 4(1), 34–42.
- Salsabila, A. R. (2022). *Gambaran Hasil Autopsi Di Instalasi Kedokteran Forensik Rumah Sakit Bhayangkara Tk. Iii Mayang Mangurai Jambi Sebagai Alat Bukti Penyelidikan Kasus Pembunuhan Di Kota Jambi Periode 2018-2020*. Kedokteran.
- Villalobos, M. I. de O. e B., Dos Santos, A. S., Horta, M. C. R., Miranda, G. E., Bastos, J. V., & Côrtes, M. I. de S. G. (2020). Prevalence of traumatic orofacial and dental injury in unidentified bodies—Data from a forensic medicine institute in Brazil. *Dental Traumatology*, 6(2), 161–166.
- Yudianto, A. (2020). *Ilmu kedokteran forensik*. Scopindo Media Pustaka.
- Zhao, X., Liang, Y., Guo, B., Yin, Z., Zhu, D., & Han, Y. (2021). Injectable dry cryogels with excellent blood-sucking expansion and blood clotting to cease hemorrhage for lethal deep-wounds, coagulopathy and tissue regeneration. *Chemical Engineering Journal*, 4(3), 126329.