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Deaths caused by Single Stab Injuries to the Trunk - Homicide or Suicide?

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Introduction

To identify the manner of death in single stab injuries is a challenge for forensic pathologists. Previous comparative studies (1)(2) are limited.

We aimed to define variables to differentiate between homicidal and suicidal deaths in single stab injuries to the trunk.

Method

Using the Swedish forensic autopsy register, we identified 75 homicides and 38 suicides that died between 2010 and 2019 following a single stab injury to the trunk.

Logistic regression models were performed.

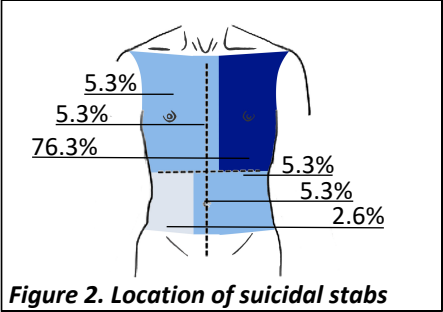
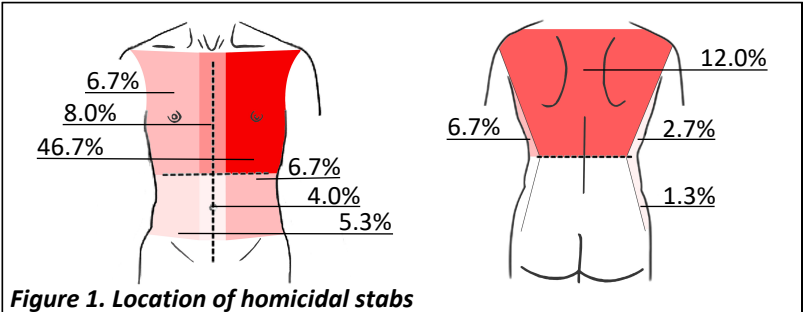
Results

We identified variables with conclusive associations to homicide, namely victim aged 20-44 years, scene of death located outdoors, injury affecting bone/cartilage of the ribcage, injury involving vasculature and positive alcohol results (table 1). The majority of all the stab injuries were located to the anterior thorax, from which a large proportion were located at the left side (figure 1 and 2). There were no suicidal stab injuries located axillary or posterior.



Table 1. Variables with conclusive associations to homicide

Variable (reference)	Homicide OR (95% CI)
20-44 years (45-65 years)	2.77 (1.09-7.04)
Found outdoors (victim's home)	15.74 (5.09-48.72)
Injury affecting the ribcage (intercostal space)	4.34 (1.71-10.99)
Injury involving vessel (not involving vessel)	8.28 (2.67-25.64)
Positive alcohol results (negative alcohol)	8.14 (2.85-23.7)



Discussion and conclusion

We were able to reproduce several findings from previous research on single stab injuries (1)(2). The variables with conclusive associations to homicide could be of value in determining the manner of death in cases of single stab injury to the trunk.

We also attempted to use variables to frame a victim profile. If the following criteria were met, the victim showed a 58.7% sensitivity and 92.1% specificity of being subjected to homicide:

- ✓ male
- ✓ ≤65 years
- ✓ positive ethanol/narcotics
- ✓ not found in victim's home

A weakness of the study is the small population and thereby low statistical power of some analyses. Therefore, further research based on larger case series is needed.