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Autopsy Findings Involving Murderous Intent: Comparison between Positive and Negative Murderous Intent Cases in Japan

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ABSTRACT

The presence or absence of murderous intent is an important fact during criminal trials. To verify autopsy findings that were considered as evidence of murderous intent, we compared autopsy findings in homicide cases committed with and without murderous intent (n = 12 and n = 11, respectively). Although the number of wounds may only be limited to one or two, stab wounds on the trunk of the body from a sharp instrument can be a significant evidence of murderous intent. Bruise or petechial haemorrhage at the back or limbs caused by blunt instruments or without any weapons do not indicate the presence of murderous intent. Although results in this study should be carefully interpreted in other jurisdictions, statistical analysis comparing cases with and without murderous intents might be a valuable methodology to understand autopsy findings involving murderous intent in Japan.

Key words: *Autopsy findings, murderous intent*

Murderous intent is the mental state of the accused. When giving impartial decisions, judges should consider objective evidences (i.e., autopsy findings) as more significant than verbal evidences. However, only a few studies have examined autopsy findings considered as evidence of murderous intent during criminal trials.

In Japan, judges obtain facts that involve murderous intent by considering circumstantial evidence: injury site, severity of the injury, and type of weapon[1,2)]. However, previous studies did not consider data from forensic autopsy reports but only judgements in criminal trials[1,2)]. Because the exact number, sites, or severity of injuries are not always described in judgements, forensic autopsy reports should also be used as a reference to determine autopsy findings involving murderous intent.

Although criminal law and tribunal procedures differ between countries, the presence of murderous intent is a significant concern during criminal trials involving homicide cases. To verify autopsy findings that have been considered as evidence of murderous intent, we conducted a statistical analysis, and autopsy findings between homicide cases with and without murderous intent were compared.

MATERIALS AND METHODS

Case selection

We performed a retrospective case study of forensic autopsies performed by the Department of Legal Medicine of Hiroshima University between June 2009 and May 2011. Cases that meet these two criteria were included in this study: (i) homicide case that has been prosecuted and (ii) available data on the criminal trial and autopsy report. Therefore, non-homicide (i.e., manner of death is suicide or accident) or non-prosecuted cases (i.e., cases without sufficient evidence for prosecution) were excluded.

We divided the cases into two groups: positive murderous intent and negative murderous intent. The presence or absence of murderous intent was defined based on the judgements during the criminal trial. Murder cases (article 199 in the Japanese criminal law, the same shall apply hereinafter) were classified under the positive murderous intent group. Cases involving injury causing death (article 205) or abandonment by a person responsible for protection (article 218) were classified under the negative murderous intent group. When the accused committed homicidal crimes against two or more people, each victim was assessed for the presence or absence of murderous intent.

Briefly, murder in Japan roughly corresponds to first- and second-degree murder in the United

States. Injury causing death, causing death through negligence and abandonment by a person responsible for protection in Japan corresponds to involuntary and voluntary manslaughter in the United States (**Table 1**). In the United States, a rule exists that when an offender kills (regardless of the intent to kill) in the commission of felony, a dangerous or enumerated crime, he/she is guilty of murder, the so called felony-murder rule[3,4]. However, no felony-murder rule exists in Japan.

Statistical analysis

Pleas, confessions to murderous intent, and types of weapons were defined based on the judgements of criminal trials. Autopsy findings (types, location, and number of injuries), basic characteristics of the victim (sex, body weight and height, and cause of death) were defined based on forensic autopsy reports.

To evaluate the autopsy findings involving murderous intent, we compared the demographics and autopsy findings of positive and negative murderous intent cases. Two-tailed Student's t-test was used in continuous variables, and the Fisher's exact test or chi-square test was used in categorical variables with a significance level of $p < 0.05$. All statistical analyses were performed using SPSS statistical software version 20 (IBM, Japan).

Counting injuries

We categorised the sites of injuries into seven anatomical areas: the head, face, neck, trunk of the body (chest or abdomen), back, upper limb, and lower limb. These categories are based on anatomical areas that a perpetrator could recognise easily even during the commission of homicide. In some cases, the exact number of injuries cannot be easily identified. Therefore, forensic pathologists express the number of injuries using terms that include 'a couple of', 'several', or 'numbers of'. To objectively assess the number of injuries, we substitute specific numbers for these terms: two for 'a couple of', 10 for 'several', and 30 for 'numbers of'. Iatrogenic injuries, for example, injection scars on the femoral vein due to central venous catheterisation in the emergency room or bilateral rib fractures due to cardiopulmonary resuscitation were excluded from the list of injuries in this study. Moreover, the type of injuries is categorised into six: petechial haemorrhage, bruise, open wound (excluding superficial incised wound), abrasion, superficial incised wound, and old injury.

For example, we substitute 'two abrasions exist on the body trunk' for the phrase 'a couple of abrasions exist on right lateral thoracic regions' in the forensic autopsy report. Because a single action from an external force can cause two or more injuries, the total number of injuries in this study does not represent the number of actions from an external force.

Ethical consideration

The procedures were approved by the Ethical Committee of Hiroshima University (approval number E-533).

RESULTS AND DISCUSSION

A total of 123 autopsy cases from our department between June 2009 and May 2011 were included in the present study. Among themy 23 homicide cases had available judgements during criminal trials: 11 positive murderous intent cases (murder cases) and 12 negative murderous intent cases (11 injury causing death cases and 1 abandonment by a person responsible for protection case) were included (**Table 2**).

A total of 10 cases used a weapon in positive murderous intent cases, whereas only 1 case used a weapon in negative murderous intent cases ($p = 0.0001$, **Table 3**). All six cases that used sharp instruments were considered as positive murderous intent (**Table 3**), and a higher number of open wounds in the trunk of the body were observed in murderous intent positive cases (1.3 ± 1.9) than that of negative cases (0.1 ± 0.3) ($p = 0.004$, **Table 4**). These results were included, although the number of wounds may only be one or two, and

Table 1. Comparison of the criminal law in the United States and Japan

Criminal law in the United States			Criminal law in Japan		Case No. (see **Table 2**)
Malice aforethought	Conditions	Crime [article no. in the U.S. code tytle 18]	Intention of homicide	Crime [article no. in Japanese climinal law]	
Yes	Willful and premeditated	First-degree murder [1111]	Yes	Murder [199]	**1, 4, 5, 10, 11, 12, 14, 15, 16, 18, 22**
	Not premeditated or planned	Second-degree murder [1111]			
No	Upon a sudden quarrel or heat of passion	Voluntary manslaughter [1112] (third-degree homicide)	No	Injury causing death [205]	**3, 6, 7, 8, 9, 13, 17, 19, 20, 21**
	In the commission of an unlawful act not amounting to a felony / In the commission in an unlawful manner.	Involuntary manslaughter [1112] (fourth-degree homicide)		Causing death through negligence [210]	
				Abandonment by person responsible for protection [218]	**2**

Table 2. Cases in the present study

Case No.	Sex of victim*	Plea†	Confession of murderous intent†	Weapon*, †	Cause of death*, †	Decision of criminal court		
						Murderous intent†	Intention of Injuryt†	Crime†
1	F	No	No	None	Throttling	Yes	No	Murder
2	F	No	No	None	Unknown	No	No	Abandonment by person responsible fore protection
3	F	No	No	None	Traumatic shock	No	Yes	Injury causing death
4	M	No	No	Sharp instrument	Exsanguination	Yes	No	Murder
5	F	No	No	Sharp instrument	Exsanguination	Yes	No	Murder
6	F	No	No	None	Diffuse cerebral swelling	No	Yes	Injury causing death
7	F	No	No	None	Exsanguination	No	Yes	Injury causing death
8	M	No	No	None	Haemorrhagic shock	No	Yes	Injury causing death
9	M	Yes	No	None	Haemorrhagic shock	No	Yes	Injury causing death
10	M	No	Yes	Automobile	Medulla oblongata dissection	Yes	No	Murder
11	F	No	No	Ligature	Ligature strangulation	Yes	No	Murder
12	M	No	No	Ligature	Ligature strangulation	Yes	No	Murder
13	F	No	No	None	Diffuse cerebral swelling	No	Yes	Injury causing death
14	F	No	Yes	Sharp instrument	Haemorrhagic shock	Yes	No	Murder
15	F	No	Yes	Sharp instrument	Exsanguination	Yes	No	Murder
16	M	No	No	Blunt instrument	Traumatic shock	Yes	No	Murder
17	F	No	No	None	Tarumatic pneumothorax	No	Yes	Injury resulting in death
18	M	No	No	Sharp instrument	Haemorrhagic shock	Yes	No	Murder
19	M	No	No	Blunt instrument	Haemorrhagic shock	No	Yes	Injury resulting in death
20	M	No	No	None	Traumatic shock	No	Yes	Injury resulting in death
21	M	No	No	None	Traumatic shock	No	Yes	Injury resulting in death
22	M	No	No	Sharp instrument	Haemorrhagic shock	Yes	No	Murder
23	M	Yes	No	None	Haemorrhagic shock	No	Yes	Injury causing death

* Data based on forensic autosy report.
† Data based on judgments of criminal trial.

Table 3. Basic characteristics of cases

	Murderous intent		*p*-value*
	Positive (n = 11)	Negative (n = 12)	
Sex (n)			
Male	6	6	1.000
Female	5	6	
Height and weight†			
Height (cm)	151 ± 33	144 ± 34	0.621
Weight (kg)	54 ± 25	42 ± 22	0.248
Plea (n)			
Innocent	0	2	0.156
Guilty	11	10	
Confession of murderous intent (n)			
Yes	3	0	0.052
No	8	12	
Weapon (n)			
Sharp instrument	6	0	<0.0001
Other instrument	4	1	
No weapon	1	11	
Type of cause of death (n)			
Injury	7	7	0.619
Asphyxiation	2	4	
Unknown	2	1	

* Student's T-test for continuous variables; chi-square test or Fisher's exact test for categorical variables
†Mean ± Standard deviation (S.D.)

Table 4. Number of physical findings in cases (n = 23)

	Murderous intent*		p-value†
	Positive (n = 11)	Negative (n = 12)	
Whole body			
Petechial haemorrhage	35.7 ± 36.9	57.8 ± 54.4	0.273
Bruise	3.4 ± 3.1	8.8 ± 5.5	0.009**
Open wound	6.6 ± 8.6	3.5 ± 4.4	0.291
Abrasion	26.7 ± 45.4	38.2 ± 38.3	0.519
Superficial incised wound	1.0 ± 2.0	0.3 ± 0.8	0.296
Old injury	89.6 ± 73.8	148.2 ± 88.4	0.101
Head			
Petechial haemorrhage	8.7 ± 16.4	4.0 ± 11.1	0.424
Bruise	0.4 ± 0.9	0.0 ± 0.0	0.187
Open wound	1.1 ± 2.1	1.1 ± 2.3	0.994
Abrasion	2.6 ± 8.1	8.4 ± 14.0	0.244
Superficial incised wound	0.0 ± 0.0	0.2 ± 0.4	0.171
Old injury	0.0 ± 0.0	2.6 ± 5.4	0.126
Face			
Petechial haemorrhage	23.3 ± 27.9	18.8 ± 25.9	0.691
Bruise	0.6 ± 1.2	2.1 ± 1.6	0.018*
Open wound	2.0 ± 5.3	2.2 ± 3.8	0.932
Abrasion	12.6 ± 25.9	10.8 ± 21.3	0.857
Superficial incised wound	0.0 ± 0.0	0.2 ± 0.4	0.171
Old injury	0.0 ± 0.0	3.2 ± 5.6	0.075
Neck			
Petechial haemorrhage	0.1 ± 0.3	0.0 ± 0.0	0.307
Bruise	0.1 ± 0.3	0.0 ± 0.0	0.307
Open wound	1.0 ± 1.9	0.0 ± 0.0	0.082
Abrasion	1.6 ± 1.9	1.5 ± 3.8	0.971
Superficial incised wound	0.1 ± 0.3	0.0 ± 0.0	0.307
Old injury	0.0 ± 0.0	0.0 ± 0.0	n.a
Trunk			
Petechial haemorrhage	3.6 ± 6.0	6.1 ± 10.2	0.481
Bruise	0.1 ± 0.3	0.1 ± 0.3	0.952
Open wound	1.3 ± 1.9	0.1 ± 0.3	0.044*
Abrasion	1.8 ± 4.9	3.3 ± 6.5	0.536
Superficial incised wound	0.6 ± 1.5	0.0 ± 0.0	0.223
Old injury	0.0 ± 0.0	0.2 ± 0.4	0.171
Back			
Petechial haemorrhage	0.1 ± 0.3	6.1 ± 7.6	0.017*
Bruise	1.6 ± 2.0	4.6 ± 5.3	0.098
Open wound	0.6 ± 1.3	0.0 ± 0.0	0.158
Abrasion	0.3 ± 0.5	0.7 ± 0.7	0.113
Superficial incised wound	0.1 ± 0.3	0.0 ± 0.0	0.307
Old injury	0.0 ± 0.0	0.0 ± 0.0	n.a
Upper limb			
Petechial haemorrhage	0.0 ± 0.0	11.4 ± 17.6	0.043*
Bruise	0.4 ± 0.7	0.6 ± 0.9	0.518
Open wound	0.4 ± 0.8	0.2 ± 0.4	0.459
Abrasion	6.6 ± 13.8	9.3 ± 13.6	0.631
Superficial incised wound	0.2 ± 0.4	0.0 ± 0.0	0.134
Old injury	0.0 ± 0.0	0.6 ± 1.1	0.089
Lower limb			
Petechial haemorrhage	0.0 ± 0.0	11.4 ± 17.6	0.043*
Bruise	0.3 ± 0.9	1.5 ± 1.7	0.043*
Open wound	0.3 ± 0.9	0.0 ± 0.0	0.307
Abrasion	1.3 ± 2.7	4.1 ± 6.3	0.184
Superficial incised wound	0.1 ± 0.3	0.0 ± 0.0	0.307
Old injury	0.0 ± 0.0	0.9 ± 2.0	0.139

* Mean ± Standard deviation (S.D.)

† Student's T-test for continuous variables (* $p < 0.05$, ** $p < 0.001$).

stab wounds on the trunk of the body from a sharp instrument can be a strong evidence of murderous intent. A stab wound in the trunk of the body is one of the typical autopsy findings that indicate the presence of murderous intent because people can easily understand that it contains vital organs (i.e., the heart, liver, and lungs).

This result supports the previous study assessing the circumstantial evidence that includes autopsy findings involving murderous intent based on 79 judgements during criminal trials[2]. Wound location and severity of injuries were used as bases for determining murderous intent in 38 out of 79 cases[2]. In 19 cases, judges found murderous intent based on the location of the injury: the chest (n = 7), heart (n = 4), abdomen (n = 7), and neck (n = 5[2]. In two cases, judges found murderous intent based on the severity of injuries: one case with 38 bruises and another case with a 15-cm-deep stab wound[2]. Although wound location and severity of injuries are important factors, judges identified murderous intent based on several components of circumstantial evidences in other cases[2]. In many common law countries, if a defendant intentionally used a deadly weapon or instrument against a victim, such use authorises a permissive inference of intent to kill (deadly weapon rule). Although a 'deadly weapon rule' does not exist in Japan, results of the present study indicate that the use of weapon lead judges to infer the presence of murderous intent.

On the other hand, the total number of bruises in negative murderous intent cases was higher than that in positive cases (p = 0.009, **Table 4**). A significant difference in the number of bruises at the face and lower limb (p = 0.018 and p = 0.043, respectively, **Table 4**) and petechial haemorrhage at the back and upper and lower limbs (p = 0.017, p = 0.043, and p = 0.043, respectively, **Table 4**) was observed. Bruise or petechial haemorrhage at the back or limbs that is formed with blunt instrument or without any weapons does not indicate the presence of murderous intent.

No significant difference was noted in the basic characteristics of the victim (sex, body weight and height, and cause of death), plea of the accused (guilty or not guilty), or confession to murderous intent between positive and negative murderous intent cases (p > 0.05, **Table 3**). Judges might consider autopsy findings as more significant than verbal evidence.

This is the first statistical analysis comparing autopsy findings in positive and negative murderous intent cases. Under the Japanese criminal law, a 'crime' is defined as the illegal and culpable act that fits the *actus reus*. *Actus reus* means the presence of act, result, causality, and intention of committing a crime. For example, man A killed man B with a knife: the fact that man A stabbed man B with the knife is the 'act', the fact that man B died is the 'result', and the relationship between man A's insertion of the knife and man B's fatality is the 'causality'. To apply article 199 (murder), prosecutors must prove the presence of intent to commit a murder by man A in addition to the presence of act, result, and causality. If the prosecutor cannot prove the murderous intent of man A, but the intent to cause injury, negligence, or abandonment, article 205 (injury causing death), article 210 (causing death through negligench), or article 218 habandonment by person responsible for protection) might be applied, respectively (**Table 1**). Therefore, the methodology in the present study might be valuable to understand autopsy findings involving murderous intent in Japan.

Limitations

First, the number of target cases is relatively small (n = 23). However, the sample size is large enough to detect statistically significant differences in autopsy findings between positive and negative murderous intent cases.

Second, autopsy findings might differ from pathologist to pathologist. However, only one forensic pathologist conducts autopsies in Hiroshima prefecture, Japan. A single pathologist has worked on all 23 forensic autopsy cases in this study.

Third, because criminal law and tribunal procedures differ between countries, careful consideration is required when applying our method to cases from other jurisdictions.

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