



A fall in doubt

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Abstract

A 27-year-old prisoner was found dead in the sanitary cell of his cell in the midst of bloodstained broken pieces of a porcelain urinal. The cause of death was a stab wound to the left side of the neck perforating the common carotid artery and the jugular vein. Furthermore, there were additional superficial cuts to the face and the left upper arm. The statement of the fellow prisoners that the man sustained the lethal injury by falling into the urinal was strongly doubted by the prosecutor. However, experiments with pig skin showed that broken pieces of a urinal could cause wounds like those of the deceased. During the trial at the county court, suspicion arose that a broken piece of the urinal with a plastic drain pipe was used as a stiletto-shaped stabbing weapon. Swabs of this part were taken for which epithelial cells and blood cells could be verified microscopically. DNA typing of the swabs has been carried out using five STR systems (TH01, VWA, D8S1132, FGA, CD4) leading to a mixed stain which could be explained by the combined allele pattern of the victim and the suspect. Considering these results, a second trial at the district court was ordered.

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1. Introduction

A 27-year-old prisoner was found dead in the sanitary cell of his cell in the midst of bloodstained broken pieces of a porcelain urinal. The autopsy established a 8×4.5 cm gaping, straight-edged stab-like cut of the skin in the left side of the neck that had a 8-cm-deep stabbing–cutting canal which cut the common carotid artery and external jugular vein. A superficial notch was found on the front side of the 5th cervical vertebra.

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Furthermore, there were multiple stab wounds on the front side of the left shoulder, a 5×3 cm injury on the left side of the head with lobular skin defects, a cut on the upper lip with skin impressions. In the preliminary autopsy report, it was stated that the injuries were most likely to have been caused by a knife-shaped weapon.

The prosecutor ordered an expert's opinion to see if a fixed straight-edged broken piece of porcelain could have caused the fatal injury. Experiments with broken pieces of porcelain on pig skin showed that each of these injuries could have been caused by broken pieces of porcelain. Moreover, we found out that such broken pieces of porcelain used as a stabbing weapon could also explain the wounds of the victim.

Having knowledge of the medical expert's opinion, the fellow prisoners admitted that the victim had rampaged in the sanitary cell whilst under the influence of alcohol. They argued that they had wanted to put him to bed against his will and during which he fell onto the intact urinal.

At the trial in the county court, the accused was charged with negligent manslaughter. He was reproached for having punched the victim in such a way that he was injured fatally when he fell against the intact urinal. During the interrogation, the accused denied any contact with the victim on that evening. Another inmate gave evidence saying that there had been a fight between the accused and the victim in the sanitary cell and that he saw the victim lying on the ground amidst a pool of blood and blood-stained broken pieces of the porcelain urinal. Beside the victim's neck there was a broken piece of the urinal with a plastic drain-pipe attached. This was suspected by the medical expert to be the handle which made the broken piece of porcelain into an appropriate stabbing weapon.

The medical expert's question as to whether any of the inmates had had contact with this broken piece of urinal was negated both by the accused and by the other fellow prisoners.

As a result of this, the remaining broken pieces of the urinal were obtained from the room where court exhibits are preserved, where they had been stored for the last 2 years. In the Institute of Forensic Medicine, swabs were taken from the drain-pipe which was attached to the broken piece of the porcelain urinal. This material was obtained from a part of the drain-pipe that is normally covered by a rubber sleeve and therefore not freely accessible, so that a coincidental skin contact would not have been possible. Despite the long time of preservation, epithelial cells from the skin could be proved microscopically. This finding was reported to the court and the accused was asked if he had an explanation for this. The man denied again having had any contact with this part of the urinal.

Consequently, as a result of this the court ordered the DNA-investigation.

2. Materials and methods

Stain material was removed from the drain-pipe using sterile cotton wool swabs moistened with bidistilled water.

Microscopic examination: the cotton wool was cut off into a 1.5-ml reaction tube, 100 μ l distilled water was added and, after vortexing, 10 μ l was transferred to a microscopic slide for H & E staining.

Table 1
DNA typing results obtained in this case

	TH01	VWA	D8S1132	FGA (FIBRA)	CD4
Swab from the gray pipe	6, 9.3	no result	no result	20, 21, 24	(6)10
Victim	6, 9.3	14	19, 20	20, 21	10
Suspect	9.3	16	18, 20	24	6, 10

DNA extraction: 100 µl Chelex 100 (5%, Biorad) and 10 µl proteinase K (10 mg/ml, Qiagen) were added to the 90 µl from the previous extract.

DNA amplification and electrophoresis: stain material—10 µl of the 200 µl Chelex extract of DNA was used for PCR; 1 U of Taq polymerase (Serac, Germany), 0.2 µM of each primer, 100 µM of each nucleotide in a total volume of 25 µl. For PCR primers and conditions, see also Wiegand et al. [4,5].

The amplified alleles were resolved by high resolution polyacrylamide gel electrophoresis according to Allen et al. [1] using methods previously described [2–5].

3. Results and discussion

Five STR systems (TH01, VWA, D8S1132, FGA, CD4) were investigated (Table 1) of which only three were positive (TH01, FGA, CD4). There was a mixed DNA profile consisting of alleles of the victim and the defendant. The other fellow prisoners could be excluded from causing the mixed DNA profile.

Both the medical expert and the DNA expert took part in the trial and reported that the broken piece of the urinal with the plastic drain pipe attached was suitable as the weapon used in the crime and that all of the victim's injuries could be explained by its use. Since the accused initially stated that he had had no contact with the handle of the drain-pipe, it could be possible that during the use of the porcelain piece as a stiletto-shaped stabbing weapon, he left epithelial cells on the handle.

Confronted with these statements, the accused changed his testimony and claimed that he had unscrewed the drain-pipe repeatedly for cleaning and therefore it could be that the epithelial cells were left during this process. This assertion did not convince the court: the trial was referred to the district court again because of the possibility of an intended killing.

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