

Dr. Rabl' s Opinion (3)

Questions 18-28 by defense counselors and answers by Dr. Rabl

Please answer these additional questions, Q18-28.

In 1935, Dr. Buji ISHIBASHI (M.B, assistant of forensic pathology lab in the Medical Department of Kyushu Imperial University) wrote two articles (Gerichtlich-medizinische Untersuchungen über die Leichnamen der Hingerichteten (1) und (2) *Archiv Für Gerichtliche Medizin und Kriminologie* 9; 540-547, 660-666; the articles were in Japanese, and only bibliographic information was given also in Germany, printed in Japan).

In these articles, Dr. ISHIBASHI reported the forensic findings of 14 judicially hanged cadavers, on which postmortem examinations had been carried out at his lab. He made the reports from the examination records in 11 cases (No. 1-11) and the findings of preserved neck organs in 3 cases (No.12-14). We have extracted the findings of each case and attached them as ref. 14.

Dr. ISHIBASHI was able to obtain neck findings for 10 cases: No.2, 3, 7-14.

In one case (No.2), there was no remarkable change in the neck. In nine cases (No3, 7-14), the neck organs were badly torn. There were fractures of cartilage; lacerations of muscles, ligaments, and vessels; remarkable hemorrhage; and the formation of cavities. Fractures of the second cervical vertebrae were found in two cases (No.10, 14). Double ligature marks were noted in two cases (No.7, 10).

Dr. ISHIBASHI's conclusion was as follows: "I believe that, in judicial hanging (JH), at the same time that the inmate was hanged, the inmate's body with considerable weight fell down at high speed; therefore, in comparison with ordinary hanging (non JH), the force on the neck was so great that the injuries were produced."

Q18. It seems that Dr. Ishibashi's reports suggested that the neck organs except for the vertebrae were so easily injured by the impact of the drop. Could you explain his result from your research on their tensile strength?

Our results are in concordance with these observations. The mean force to disrupt the Mm. sternocleidomastoidei was 80 Newton, for one centimeter of neck skin 150 N and for separation of the cervical spine (without fractures) a tearing force of 1000 N was necessary.

Q19. You mentioned in your answers to Q5 that consciousness of a hanged person would last at least for 5-8 seconds in JH, except for the rare case. Dose a hanged person felt pain from the above-mentioned injuries during this period of consciousness?

Such injuries would lead to serious pain for the hanged person.

Q20. Dr. Furuhata's opinion seems to be based on the precondition that the blood flow of the cervical arteries is obstructed completely and instantaneously in every JH of an inmate weighing more than 20kg. From the viewpoint of current forensic science, is this precondition correct even if the asymmetrical rope position is used? Please explain the reason of your answer. And if you know any articles about this topic, please introduce them to us.

In the cases of asymmetrical rope position (highest point in front of the ears – atypical hanging) the arteries (A. carotis and A. vertebralis) on the side of the highest point are not obstructed in most cases – this leads to a syndrome of congestion with petechial hemorrhages in the conjunctivae, oral mucosa, ... and to a longer period of consciousness. BUT: even if the cervical arteries are obstructed immediately – the oxygen reserve of the brain would allow a period of consciousness of several seconds (5-8 s).

It is often said that they have the intention to cause a cervical spine fracture for the immediate death of the inmate in JH, by adjusting the height of the fall and the position of the knot. But Dr. Ishibashi's result suggested that the rate of fracture would be low, which seems to correspond with the description of James et al. (*Forens. Sci. Int.* Vol.54 pp.81-91 1992).

Yes – this fact is known and commonly accepted in forensic medicine. In this context it has to be mentioned, that a vertebral fracture itself does not lead to immediate unconsciousness. The parts of the fractured vertebra would have to be displaced and injure the medulla oblongata. A fracture of the body of C2 (case 10) or an incomplete fracture of both superior articular surfaces of C2 (case 14) per se do not cause unconsciousness!!

Q21. Please explain the forensic or biomechanical conditions which cause the fracture of the cervical spine in JH. Would it be difficult to realize this condition in actual JH, even if they intend to do so? If so, why would it be difficult?

Fractures of the cervical spine in cases of hanging are caused by forces that

exceed the biomechanical limits of the vertebrae. This can be reached by compression (not possible by hanging), hyperextension, hyperflexion, excessive lateral movement or torsion (not possible). An asymmetrical position of the rope would increase the risk for fracture but cannot guarantee fractures and even less injuries of the medulla.

Q22. Do you think that the low-rate of the cervical spine fracture supports your answers to Q4 and Q5, that the cervical fractures with compression of the medulla oblongata (which will cause “almost instantaneous” death) are rare?

Yes. Fractures are rare and additional injuries of the medulla are very uncommon.

Q23. This is confirmation about the article by Dr. Schwarzacher, which Dr. Furuhashi quoted in his written opinion. Dr. Schwarzacher measured the force to occlude the neck vessels completely with placing a rope symmetrically on the throat of a cadaver. He didn't make any experiments with asymmetrical rope positions nor on consciousness of the person whose neck vessels were completely obstructed.

Is this correct? If our understanding is wrong, please explain and make correction.

In his article Schwarzacher mentioned other positions of the rope but he did just stated, that in the cases of typical hanging (highest point of the rope in the neck) the lowest forces were needed to stop the circulation in the arteries.

We quote a book (*Former prison officer talks on prisons San-ichi shobou* pp32-33; in Japanese) written by Mr. Toshio SAKAMOTO in 1997, who was a former prison officer. In the quotation, he recalled his prison officer days:

“(Translator’s note: A veteran prison officer over 50 years old is talking to Mr. Sakamoto...), “I have taken part in the execution twice. On the second, a new senior-prison-officer took charge of placing the noose around inmate’s neck. The officer looked pale and his hands and legs were trembling. What a mess!, I thought. But the order to open the trapdoor was given. The handle was pulled. The inmate fell down, but he did not die because he was hanged with the rope on his jaw. The warden and the prosecutor who attend the execution were so upset that they couldn’t say a word.”

The old prison officer was unable to continue speaking, and he looked up the sky.

“I”, he faltered in his speech, “Saved him from the pain.”

What he said he meant was that in some way he had killed the condemned man who

dangled from a rope that hung around his chin suffered without being able to die.

A horrible, but unfortunately realistic story.

Q24. If in JH the noose is not on the throat but on the face, as in the above-mentioned case, could you estimate how long consciousness of the hanged inmate would last? Will the inmate die in such an execution of JH with the noose on the face? Please also explain the reasons of your answers.

This depends on the exact position of the noose and the movements of the head during hanging. If the cervical vessels are not compressed – unconsciousness cannot occur.

Q25. Mr. Sakamoto suggested that the new prison officer misplaced the noose. Is it possible that otherwise the noose, which had been ‘properly’ placed before the drop, might slip or move to ‘improper’ positions after the drop because of the impact of the drop and/or anatomical variations? (We have attached the file ref.16, a case of the noose slipping from the neck in JH).

This is possible if the diameter of the loop is too high, so that the noose can “move”.

Q26. We understand that the article by Dr. Rossen et al. (1943) has been quoted in many articles. Where do you think the credibility of this article comes from? Please explain from the standpoint of a forensic scientist.

Rossen made his experiments with living (!!) young men. This makes the article unique – all other authors reported about observations or made experiments with corpses.

Q27. This is confirmation about the article by Dr. Rossen et al. The test persons felt pains only because of the stoppage of blood flow to the brain. Is this correct? If our understanding is wrong, please explain and make correction.

The pain of these persons cannot be caused by the forces on the neck. The pain sensations account to impairment of the circulation of neck organs and the brain (maybe with brain swelling and headache).

In Japanese JH, it is said that the noose is made of hemp rope with a 2.0cm diameter and covered with leather.

Q28. By covering the noose with leather, would the inmate's risk of the following decrease?

- (1) Damage to the skin?
- (2) Injury to subcutaneous neck organs?
- (3) Decapitation (DC)?
- (4) Slow strangulation with consciousness (SSC)?

Please also explain the reasons of your answers.

By covering with leather only the risk of skin abrasions would be reduced because of the more slippery surface. The forces itself cannot be reduced by such a covering, so the risks of 2, 3 and 4 would not change.