Current status of Autopsy imaging examination in Japan.

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Learning objectives

• To enable the committee to make recommendations for achieving even more practical operational systems, a questionnaire survey on current postmortem use of CT and MRI equipment in medical facilities was distributed to all hospitals in Japan with beds for general patients with the aim of determining the current situation regarding the performance of AI.
Background

• Under the current system, three categories of autopsy are performed in Japan: pathological autopsy, legal autopsy, and administrative autopsy. However, except for administrative autopsies performed in the 23 wards of Tokyo and some of the country’s major cities, the autopsy performance rate is extremely low due to deficiencies in the Japanese system for performing autopsies and an absolute insufficiency of physicians qualified to perform autopsies.

• With changes such as these in the social background, there is a growing demand in Japan for better accuracy in determining cause of death.

• Ai (Autopsy imaging) enables the family of the deceased to be provided with an immediate explanation of the cause of death, and facilitates proceeding to an autopsy in cases where the Ai findings indicate further examination is required. Furthermore, not only is Ai useful in terms of screening as well as immediacy, but because it is a nondestructive examination it is also possible to revise findings at a later date. For these reasons, Ai is very useful in cases where the family of the deceased express suspicions some time after the death or when a lawsuit has been brought. Thus the expansion of Ai is to the benefit of both healthcare professionals and the families of the deceased.
Imaging findings OR Procedure details

Questionnaire Survey Results

• In conducting this questionnaire survey, the committee enlisted the cooperation of the All Japan Hospital Association and the Japan Hospital Association, and questionnaires were distributed to 6,150 hospitals with beds for general patients. Valid responses were received from 2,450 facilities, a response rate of 39.8%. The percentage of medical facilities that have performed some kind of imaging of patients’ bodies at the time of or after their death and/or at the request of the police was 35.8% (876 facilities). Looking at use of imaging by prefecture, a marked disparity between regions was observed in the percentage of facilities where Ai has been performed.

Cases in which Ai was performed

• The percentage for Group A facilities was particularly high compared to Group B facilities (see Figure 1) in the case of Ai performed "After someone other than a patient already undergoing treatment is taken to hospital by ambulance". Moreover, the percentage for Group B was 10 points higher than for Group A in the case of Ai performed "After a patient already undergoing treatment is taken to hospital by ambulance", and in the case of Ai performed either "When there is a sudden change in the condition of a patient in hospital" or "When a patient in hospital dies of natural causes", the percentage for Group B facilities was more than twice that for Group A facilities.

Costs

• We next looked at who paid how much for Ai to be performed. Of Group A facilities (445 out of 855 facilities), 52.0% covered Ai costs out-of-pocket either totally or partially, while 79.3% of these facilities or 41.3% of total Group A facilities (353 facilities) covered the total cost of Ai out-of-pocket. Furthermore, 64.3% of facilities - including those that covered the total cost of Ai out-of-pocket - replied that the actual amount paid was insufficient.

• The average amount received (see Figure 2) by Group A facilities was less than 20,000 yen in 83.0% of cases, even excluding those hospitals that covered the total Ai cost out-of-pocket. With regard to the amounts facilities regarded as being appropriate, only 25.9% of Group A and 43.1% of Group B facilities regarded amounts less than 20,000 yen as appropriate. Looking at amounts of 20,001 yen or more, 74.1% of Group A and 57.0% of Group B facilities regarded amounts above 20,001 yen as appropriate, with Group A facilities tending to stipulate higher amounts.

• We next looked at the costs for facilities that performed Ai frequently (see Figure 4). Of the 138 facilities that performed Ai 20 times or more per year, 53.6% (74 facilities) covered the costs of Ai out-of-pocket either totally or partially, while 71.6% (53 facilities)
covered the total cost of Ai out-of-pocket. Furthermore, 65.8% of facilities (77 out of 117) - including those that covered the total cost of Ai out-of-pocket - replied that the actual amount paid was insufficient. Looking at the average amount received, excluding those hospitals that covered the total Ai cost out-of-pocket, 88.3% of facilities (68 out of 77) received amounts less than 20,000 yen. With regard to what amount facilities regarded as being appropriate, 17.6% (13 facilities) regarded amounts less than 20,000 yen as appropriate, while 82.4% (61 facilities) regarded amounts of 20,001 yen or more as appropriate.

With regard to deaths that occur in hospitals, emergency medical care facilities already perform Ai and perform their own diagnostic imaging, but the results of this questionnaire indicate that approximately 50% of the cost is Ai is born out-of-pocket by facilities. Looking at the results of a survey of emergency medical care facilities, emergency medical care facilities routinely perform Ai and can be regarded as better prepared for collecting fees for Ai compared with hospitals that are not emergency medical care facilities.

Results of this questionnaire provide a glimpse of the reality that actually performing Ai costs more than anticipated. Moreover, the results show a clear discrepancy between the actual amounts received and the amounts regarded as appropriate. Moreover, The percentage of costs born out-of-pocket by facilities performing Ai 20 times or more per year and the average amount received were virtually the same as those for Group A facilities as a whole. With regard to amounts regarded as appropriate, a tendency amongst facilities performing Ai 20 times or more per year towards stipulating higher amounts than those stipulated by Group A as a whole was observed. Due to a lack of financial resource measures for covering the cost of pathological autopsies, facilities also cover these costs out-of-pocket. It is therefore urgent that financial resources for performing diagnostic imaging and autopsies for not only judicial cases but also deaths occurring in hospitals are secured.

Problems

With regard to problems encountered in using CT equipment at general medical facilities for Ai, the response from Group B facilities was 12.1 points higher than that for Group A for "Ethical issues" (see Figure 5). Due to their experience in performing Ai, Group A facilities can be thought to have cleared ethical problems, yet the results indicate that 31.9% of Group A facilities have performed Ai while believing that ethical issues exist. Both Group A and Group B facilities regard "Cost" as the greatest problem, with around 60% of respondents in each group choosing "Cost" as a problem. Other problems suggested by respondents included legal issues/locus of responsibility for death certificates, visibility to general patients, hygiene/infection, time/personnel limitations, and imaging equipment/image interpretation skills. In addition, there were also respondents who expressed the opinion that no problems exist.

Performance of Ai in the case of infant deaths
•Public interest in the issue of abuse is high. •Japan medical association has recommended that Ai be performed in all cases of suspected child abuse as one of the advantages of Ai is its ability to detect evidence of bone fractures, which can be difficult to discover in autopsies. In preparation for mandatory performance of Ai in such cases, further deliberations involving related societies and centered on medical societies are required.
Fig. 1

Cases in which AI was performed (performance of AI is desirable)

- After a patient already undergoing treatment is taken to hospital by ambulance: Group A (N=870) 30.6%, Group B (N=694) 40.6%
- After someone other than a patient already undergoing treatment is taken to hospital by ambulance: Group A (N=870) 34.7%, Group B (N=694) 57.1%
- When there is a sudden change in the condition of a patient in hospital: Group A (N=870) 35.7%, Group B (N=694) 79.8%
- When a patient in hospital dies of natural causes: Group A (N=870) 17.4%, Group B (N=694) 22.6%
- At the request of the police: Group A (N=870) 44.1%, Group B (N=694) 33.9%
- Other: Group A (N=870) 10.5%, Group B (N=694) 7.2%

Fig. 2

Average amounts received and appropriate amounts

- Average amount received (N=451): 0% - 29.3%, 20% - 53.7%, 40% - 13.3%, 60% - 0.4%
- Amount appropriate for Group A (N=448): 0% - 17.4%, 20% - 14.1%, 40% - 32.1%, 60% - 31.2%
- Amount appropriate for Group B (N=664): 0% - 2.2%, 20% - 31.9%, 40% - 32.4%, 60% - 16.2%, 80% - 7.4%, 100% - 3.3%
Fig. 4

Fig. 3
Conclusion

• In future, it will be necessary to establish Ai as one method of postmortem medical examination, but it goes without saying that this must occur under the leadership of healthcare professionals and not legal or administrative bodies. Accordingly, the committee believes it to be imperative that Ai is promoted under the close cooperation and coordination of medical associations and relevant societies.
Personal Information

## infomation center

http://www.autopsyimaging.com/
(In Japanese)

The Japanese Society of Autopsy Imaging

http://plaza.umin.ac.jp/~ai-ai/english/index.html
(In English)
References


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