

# The 1st Japanese-German International Symposium

Forensic Medicine & Sciences

## *Child Abuse and Domestic Violence*

Dr. Seishu Hanaoka



Co-organization

Institute for Legal Medicine, Ludwig-Maximilian University, Munich  
Department of Forensic Pathology and Sciences, Nagasaki University  
Department of Forensic Medicine, Wakayama Medical University

Wakayama, 18 August, 2016  
Clinical Lecture Room II of Wakayama Medical University Hospital (4F)

13:00-13:10 *Opening remarks*

**13:10-13:35 Oral presentation I (Chairperson: Takaki Ishikawa)**

Multi-experts-consultation system in Nagasaki prefecture

Takuma Yamamoto

Division of Forensic Pathology and Science, Nagasaki University School of Medicine

**13:35-14:00 Oral presentation II (Chairperson: Takaki Ishikawa)**

Prevention of child deaths by forensic medicine

Momoka Tanabe

Medical Course, School of Medicine, Yokohama City University

Department of Legal Medicine, Yokohama City University Graduate School of Medicine

**14:00-14:25 Oral presentation III (Chairperson: Toshikazu Kondo)**

Victim protection ambulance at the Institute of Forensic Medicine

Lisa Eberle

Institute for Legal Medicine, Ludwig-Maximilian University, Munich, Germany

**14:25-14:50 Oral presentation IV (Chairperson: Toshikazu Kondo)**

Child protection ambulance at the Institute of Forensic Medicine

Elisabeth Mützel

Institute for Legal Medicine, Ludwig-Maximilian University, Munich, Germany

14:50-15:05 *Coffee break:*

**15:05-15:30 Oral presentation V (Chairperson: Hiroshi Kinoshita)**

Two autopsy cases of child deaths due to neglect

Yosuke Usumoto

Department of Legal Medicine, Yokohama City University Graduate School of Medicine

**15:30-15:55 Oral presentation VI (Chairperson: Hiroshi Kinoshita)**

Effects of the adrenal endocrine system in a restraint stressed mouse and application to postmortem indicators of child and elder maltreatment

Takahito Hayashi

Department of Legal Medicine, Graduate School of Medical and Dental Sciences, Kagoshima University

**15:55-16:20 Oral presentation VII (Chairperson: Yoko Ihama)**

Forensic diagnosis of child and elder abuse based on impairment of various organs

Mamoru Ogata

Department of Legal Medicine, Graduate School of Medical and Dental Sciences, Kagoshima University

**16:20-16:45 Oral presentation VIII (Chairperson: Yoko Ihama)**

Presentation of injury mechanisms using postmortem/antemortem CT data in suspected child abuse case

Tomomi Michiue

Department of Legal Medicine, Osaka City University Medical School

16:45-17:00 *Closing remarks*

18:00-20:00 Further session for Exchanges of Information and Opinions

Japanese Barbecue Restaurant "Gachi" Tel: 073-447-1311

<http://tabelog.com/wakayama/A3001/A300101/30000252/>

## Oral presentation I

# Multi-experts-consultation system in Nagasaki prefecture

Takuma Yamamoto, Takahiro Umehara, Takehiko Murase, Yuki Abe,  
Kazuya Ikematsu

Division of Forensic Pathology and Science, Unit of Social Medicine, Course of Medical and Dental Sciences, Graduate School of Biomedical Sciences, Nagasaki University School of Medicine

In Nagasaki prefecture, about 300 cases are annually suspected and reported to two consultation centers from hospitals, schools and nurseries. Some of them, which are considered to be significant from the point of medical view, are consulted to our department.

Our departments have some unique systems. At first we have variety of experts. Forensic scientists are used to diagnose why wounds or injuries are occurred. On the other hand how long these wounds are cured is not their major. They don't also have much experience of radiology. Medical doctors seldom examine the oral cavity and therefore the cooperation with general dentists is essential. We have two medical doctors, all of who are majoring forensic science, and two dental doctors, who are working as a general dentist and also as a forensic dentist. We also have an agreement with some radiologists, one of who is working as a forensic radiologist. We can consult other doctors such as pediatricians, general physicians, emergency physicians, general surgeons, orthopedic surgeons and brain surgeons.

The second characteristic is that we can handle the consultation rapidly. Abuse-suspected cases require a rapid handling. We have several experts in each division and can handle every matter quickly.

At our presentation we introduce our department and present a few cases that our system was successful.

## Oral presentation II

### Prevention of Child Deaths by Forensic Medicine

Momoka Tanabe<sup>1</sup>, Yosuke Usumoto<sup>2</sup>, Yoko Ihama<sup>2</sup>

1. Medical Course, School of Medicine, Yokohama City University

2. Department of Legal Medicine, Yokohama City University Graduate School of Medicine

The decreasing number of children has become a serious problem in Japan. While the declining number of births has received a great deal of attention, the trend of child deaths in Japan has not yet been widely discussed. In fact, the number of child deaths in Japan has been decreasing. While accidents and suicides can be prevented, they still accounted for approximately 24% of all child deaths in 2014. The current study assessed the potential explanations for and the ways that 34 cases of child death experienced in our department from April 2015 to July 2016 could have been prevented. We first categorized those cases according to their causes of death, including 13 natural deaths, 16 unnatural deaths and 5 deaths due to unknown causes. We next evaluated the possibility of preventing each death. Of these deaths, 11 were highly preventable, 13 were moderately preventable, and 10 deaths were not or slightly preventable. We then explored methods to safeguard children's lives. Because it is difficult for children to prevent their own deaths, various approaches must be taken by those caring for them, including family members, medical staff, school and social support systems. Finally, we discussed several of the preventable child deaths in this study. For example, appropriate sleeping positions may have prevented the deaths of three infants due to asphyxiation while sleeping. Second, the deaths of three teenagers due to suicide might have been prevented by increased awareness of their problems. In order to prevent child deaths, careful autopsy is also important in order to reveal the true causes of death. Prevention of child deaths may be a new approach to address the decrease in the number of children in Japan. In this regard, forensic medicine could potentially play a role in saving the lives of children.

## Oral presentation III

# Victim Protection Ambulance at the Institute of Legal Medicine in Munich/Germany

Lisa Eberle

Institute for Legal Medicine, Ludwig-Maximilian University, Munich, Germany

As a part of the field of clinical forensic medicine domestic violence has a special character because the victims are generally reluctant to report the perpetrator (mostly intimate partner) to the police.

Beginning with a pilot project named MIGG-Project funded by the German Federal Ministry for Family, Senior Citizens, Women and Youth to train general medical practitioners in awareness of topics in the context of violence, development of medical options and building a network of clinics with the help of regional structures the Victim Protecting Ambulance for adults was established in 2010 at the Institute of Legal Medicine in Munich to provide an opportunity for victims without primarily involving the police .

We offer a telephone consultation for 24 hours every day not only for victims but also for Medical doctors, who has to examine a victim of (domestic) violence especially in distant regions. Persons with injuries resulting from acts of violence are provided a voluntary forensic documentation and saving trace evidences which can be used later as evidence in court. We inform them about organizations helping victims in further steps to escape from the actual situation.

Furthermore, we also give lectures for medical doctors to train them to improve detection and management of cases of domestic violence.

From 2010-2015 we have examined about 30-40 victims per year in our Victim Protection Ambulance for adults and there is an increasing number of telephone consulting up to over 100 calls per year.

The goal of our initiatives is to reduce the black number of victims of domestic violence, encourage them to come out of their situation with help of the networks against domestic violence.

## Oral presentation IV

# Child Protection Ambulance at the Institute of Legal Medicine in Munich/Germany

Elisabeth Mützel

Institute for Legal Medicine, Ludwig-Maximilian University, Munich, 80539  
Germany

Since 2011 a child protection ambulance exists at the Institute of Legal Medicine Munich. The ambulance is funded by the Bavarian State Ministry of employment and Social Order, Family and Integration. The offer of the ambulance is low-threshold and for parents and Custodians, the child and youth welfare office and the medical doctors. We offer an examination free of charge, a documentation, to secure evidences and keep them safe about 2 years; we help the other professions to decide about significant points to child abuse. A 24-hour telephone was established.

We make training courses for medical doctors every year since 2013, a lot of training courses for employees of the child and youth welfare offices as well during the year.

From 2010-2015 we have examined about 60 children and youth every year, there is an enormous increasing number of consulting telephones and an increasing number of cases by our telemedicine portal "Remed-online".

It is necessary to protect our children, which we could only handle by teamwork with all professions.

## Oral presentation V

### Two autopsy cases of child deaths due to neglect

Yosuke Usumoto<sup>1,2</sup>, Yoko Ihama<sup>1</sup>, Noriaki Ikeda<sup>2</sup>

1. Department of Legal Medicine, Yokohama City University Graduate School of Medicine, Japan
2. Department of Forensic Pathology and Sciences, Graduate School of Medical Sciences, Kyushu University

Neglect is the most common type of child maltreatment and is defined in American law as "the failure of a parent, guardian, or other caregiver to provide for a child's basic needs." Neglect is classified to 4 types; physical, medical, educational and emotional. Medical neglect is defined as the "failure to provide necessary medical or mental health treatment." The belief system of caregivers frequently prevents them from seeking appropriate medical care for their children. Belief systems can be influenced by complementary and alternative medicine (CAM), religion, and cultural factors. Therefore, it is difficult to distinguish medical neglect from parental choice. Physical neglect is defined as the "failure to provide necessary food or shelter, or lack of appropriate supervision", thought to be closely related to medical neglect because physical neglect is sometimes may be fatal. We report two autopsy cases of infant deaths due to physical neglect and medical neglect.

Case 1: A 2-month-old girl. Her mother's milk did not flow well and her parents did not give her baby milk because of their belief system. Her parents were only making her sunbathe and were not taken her to the hospital. Forensic medical autopsy was done and her cause of death was malnutrition.

Case 2: A 2-year-old girl was transferred to a hospital because of respiratory distress. She died 4 hours after arrival. Her parents had not taken her for a medical check-up or immunization, because her mother preferred CAM (i.e., naturopathy) to evidence-based medicine. Forensic medical autopsy was done and her cause of death was acute lymphoblastic leukemia.

It is difficult to clearly distinguish medical neglect from parental choice. The popularity of many CAMs is increasing worldwide, including in Japan, so we afraid that the similar cases are increasing in the future. Forensic pathologists must report medical neglect for the advancement of scientific and evidence-based medicine and enhancement of cooperation between evidence-based medicine and CAM.

## Oral presentation VI

### **Effects of the adrenal endocrine system in a restraint stressed mouse and application to postmortem indicators of child and elder maltreatment**

Takahito Hayashi, Takuma Nakamae, Kazuho Maeda, Eri Higo, Mamoru Ogata

Department of Legal Medicine, Graduate School of Medical and Dental Sciences, Kagoshima University, Kagoshima, Japan

Maltreated victims are likely to suffer from severe mental stress, which may exert harmful influences on various internal organs. We investigated adrenal endocrine systems through the hypothalamic-pituitary-adrenal (HPA) and sympathetic-adrenomedullary (SA) axis in a murine restraint stress model of psychological abuse and in autopsy cases to determine possible indicators for the diagnosis of child and elder maltreatment. In animal experiments, adrenal weights and serum levels of ACTH and glucocorticoids showed an increase in response to 1 day to 3 weeks of stress, whereas the adrenal cholesterol content decreased. Gene expression involved in cholesterol supply, including scavenger receptor class B type I (SR-BI), HMGCoA reductase, and hormone-sensitive lipase, was increased over the same period. Adrenal gene expression of chromogranin A (CgA), secreted via the SA axis was increased with 1 day to 2 weeks of stress, and decreased with 3-4 weeks of stress. We performed similar investigations using autopsy samples of child and elder abuse. Children maltreated for relatively short periods (several weeks to 2 months) showed an increase in adrenal weight compared to controls. In addition, they showed a decrease in adrenal cholesterol content and an increase in adrenal SR-BI immunoreactivity. Children maltreated for relatively long periods (more than several months) did not show these changes, except for a decrease of CgA immunoreactivity. On the other hand, the elderly maltreated for less than 3 months showed a significant increase in the adrenal weight in comparison to control cases. In such cases, histopathological findings showed a loss of intracellular light granules from the zona fasciculata, which might indicate a loss of cholesterol due to the overproduction of glucocorticoid. Our study suggests that analyses of adrenal endocrine systems based on the combination of several indicators related to the HPA and SA axis might be useful for proving stress due to maltreatment, as well as determining its duration.



## Oral presentation VII

### **Forensic Diagnosis of Child and Elder Abuse Based on Impairment of Various Organs.**

Mamoru Ogata, Takahito Hayashi, Takuma Nakamae, Kazuho Maeda, Eri Higo

Department of Legal Medicine, Graduate School of Medical and Dental Sciences, Kagoshima University, Kagoshima, Japan

The abuse and neglect of children and the elderly are recognized as widespread and growing problems. Typically maltreated victims show hallmark findings at autopsy such as malnutrition, various types of injury, varying wound ages from multiple injuries over the whole body, and thymic involution in children. However, forensic pathologists may encounter cases that are suspicious for maltreatment, in which only a few of these typical morphological changes are observed at autopsy. Therefore, other postmortem indicators of maltreatment would be very useful in the forensic environment. We reported that the immunohistochemical detection of (1) hemoglobin and/or myoglobin in the tubular cells of the kidney, (2) traumatic axonal injury in early and late stages using anti- $\beta$  amyloid precursor protein or anti-interleukin-8 antibody, and (3) the infiltration of 'primed' neutrophils into multiple organs using anti-myeloperoxidase antibody and several antibodies against inflammatory mediators may be useful as new diagnostic indicators of physical abuse. In addition, we demonstrated temporal changes of the adrenal endocrine system in a restraint-stressed mouse and possible indicators of prolonged psychological stress, which may be similar to stress suffered by abused children and elders. Further, we demonstrated the temporal expression of 13 wound healing-related genes, together with aquaporin-1 and -3 genes in a skin burn injury model, similar to that observed in cases of physical abuse. Our results identify effective diagnostic markers for confirming abuse, as well as determining its duration. Some of the markers can be applied to the clinical diagnosis of abuse. Our results also emphasize the importance of the prevention of child and elder abuse. Here, we present some of the results, including the infiltration of neutrophils into multiple organs in the Symposium.

## Oral presentation VIII

### **Presentation of injury mechanisms using postmortem/antemortem CT data in suspected child abuse cases**

Tomomi Michiue<sup>1,2</sup>, Jien-Hua Chen<sup>1,2</sup>, Naoto Tani<sup>1,2</sup>, Shigeki Oritani<sup>1</sup>,  
Takaki Ishikawa<sup>1,2</sup>

1. Department of Legal Medicine, Osaka City University Medical School, Japan
2. Forensic Autopsy Section, Medico-legal Consultation and Postmortem Investigation Support Center (MLCPI-SC), Japan

Forensic specialists are often required to give an explanation of injury mechanisms for Child Guidance Office staff, Saiban-in (lay or citizen judges), and police officers in child abuse cases in Japan. However, it is difficult to gain the understanding of those who do not have specialized medical knowledge. Osaka Prefecture (population, approx. 8.8 million) has the largest number of the calls to Child Guidance Offices in Japan. In our institute, which covers the southern half of Osaka City (population, approx. 1.6 million), 9 forensic autopsies involving child abuse were performed in a total of 64 child (< 10 years old) cases over a period of about 7.5 years (Jan. 2009 – Jul. 2016). Additionally, Child Guidance Offices sometimes consult with us on the cases of injured children. This is a short review of two cases, whose postmortem/antemortem CT data were useful for explanation of the injury mechanisms. Case 1: Forensic autopsy case. A 1-year-old boy died due to hemorrhagic shock that resulted from laceration of the mesentery and jejunum, suspected to have been caused by his abdomen being pressed by a hand. Case 2: Living injury case. A 1-year-old girl may have fallen from a sofa twice. The Child Guidance Office staff wondered how her right ear had been bruised and consulted us. In conclusion, the use of using CT data is a good supporting tool for the presentation of injury mechanisms.

# Memo