English pages

Report of the 15th Annual Meeting of the Japanese Society of Immunotoxicology (JSIT2008)

Jun-ichi Sawada
(President of JSIT2008)

The 15th Annual Meeting of the Japanese Society of Immunotoxicology (JSIT2008) was held on September 11 and 12, 2008, at Tower Hall Funabori, Edogawa, Tokyo (for details, see "Annual Meeting" of the JSIT english homepage, http://www.immunotox.org/english/index.html). A total of 185 persons attended the meeting, and the meeting included 15 oral and 17 poster presentations in addition to the special programs. I hope every attendee enjoyed JSIT2008. The titles of the special programs were as follows:

Invited Plenary Lecture: "Immunotoxicology of innate immunity" (Stephen B. Pruett, College of Veterinary Medicine, Mississippi State University, USA)
Keynote Lecture: "Genetic polymorphisms and myelotoxicity of anti-cancer drugs" (Jun-ichi Sawada, National Institute of Health Sciences)
Master's Lecture: "Immunotoxicogenomics of environmental chemicals" (Keiko Nohara, National Institute for Environmental Studies)
Symposium 1: "Immunotoxicity of nanoparticles"
Measures to evaluate the health effects of manufactured nanomaterials (Akihiko Hirose, National Institute of Health Sciences)
The importance of characterization for nanoparticles and its pulmonary effects in rats. (Akira Ogami et al., University of Occupational and Environmental Health)
Synergistic effects of nanoparticles/materials on pathological conditions (Ken-ichiro Inoue et al., National Institue for Environmental Studies)
Safety concerns of nanomaterials to skin: Safety and skin penetration of nanomaterials (Kenji Sugibayasi, Josei University)
Symposium 2: "Gut-associated lymphoid tissues and their regulations"
Regulation of gut immunity by retinoids (Makoto Iwata et al., Tokushima Bunri University)
Intestinal immunity-mediated allergy-Establishment of murine food allergy model l- (Tomoko Shindo et al., Food and Drug Safety Center)
Immunomodulation by probiotic lactobacilli through regulating functions of macrophages (Kan Sida, Yakult Central Institute for Microbiological Research)
Mucosal immune dysfunction by the trichothecene mycotoxins (James J. Pestka, Center for Integrative Toxicology, Michigan State University) (Dr. Pestka participated as the exchange speaker from SOT ImTox SS.)
Workshop: "Secondary immunomodulatory effects and allergenicity of pharmaceuticals"
Regulation of allergic immune response by PPAR agonists (Shigeharu Ueki, Akita University School of Medicine)
The role of dopamine as an immune modulator (Kazuhisa Nakano, University of Occupational and Environmental Health)
Inter-laboratory validation studies on LLNA-DA and LLNA-BrdU (Hajime Kojima et al., National Institute of Health Sciences)
Validation of non-RI methods -Data analysis- (Takashi Omori and Takashi Sozu (Kyoto University School of Public Health)
Briefing of ICCVAM LLNA peer review meeting (Takahiko Yoshida, Asahikawa Medical College)

The 16th Annual Meeting of the Japanese Society of Immunotoxicology

August 27-28, 2009
Asahikawa Cultural Hall, Asahikawa, Japan
Theme: "Children and Immunity"
Invited Plenary Lecture I:
Dori Germolec, PhD (NIEHS, USA)
Invited Plenary Lecture II:
Masao Kosuge (Director of Asahikawa Asahiyama Zoo)
Symposium: "Children and Immunity"
Workshop
Oral presentations / Poster presentations

President: Prof. Takahiko Yoshida
Secretary office: Dept. of Health Science, Asahikawa Medical College, Asahikawa, Japan
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A prize for annual convention

Elevation of aging-associated inflammatory markers among atomic-bomb survivors

Tomonori Hayashi, Yoichiro Kusunoki, Yukari Morishita, Hiroko Nagamura, Mayumi Maki, Yoshiko Kubo, Kengo Yoshida, Kei Nakachi

Department of Radiobiology/Molecular Epidemiology, Radiation Effects Research Foundation, Hiroshima, JAPAN

[Abstract]

Among a cohort of Hiroshima atomic-bomb survivor, we observed elevations of plasma inflammatory markers such as IL-6, TNF- α , IL-10, CRP, ESR and total Igs as well as ROS, in which exposure to 1 Gy of radiation was estimated to correspond to about nine years of aging. The results suggest that effects of radiation exposure involve inflammatory response enhanced by acceleration of aging.

【Objective】

Even after more than 60 years have passed, exposure to atomic-bomb radiation continues to have long-term health effects in survivors, whose risks of certain inflammation-related diseases remain high. It has been acknowledged in numerous reports that people exposed to high-dose radiation in accidents or medical treatment suffered from acute inflammatory reactions for several days following exposure, although the long-term late effects of radiation on inflammatory status have yet to be thoroughly clarified. We have learned much from the longstanding studies of atomic-bomb survivors, who experienced the atomic bombings of Hiroshima and Nagasaki in 1945. Two major cohort studies, the Life Span Study (LSS) and the Adult Health Study (AHS), have been conducted by RERF, of which the AHS is a comprehensive clinical follow-up study based on biennial clinical examinations, for a selected subset of the LSS population. In this study, we investigated association between plasma levels of inflammatory markers and ROS, peripheral lymphocyte subsets, and radiation dose in Hiroshima A-bomb survivor subjects randomly selected from the AHS population.

【Materials and Methods】

Excluding patients with history of cancer, rheumatoid arthritis, chronic bronchitis, or myocardial infarction, we randomly selected 442 study subjects from the AHS population, consisting of A-bomb survivors and unexposed controls. Plasma levels of inflammatory markers (IL-6、TNF- α , CRP, IFN- γ , Igs) and erythrocyte sedimentation rate (ESR) were measured by ELISA and the Westergren method, respectively.

【Results and Discussion】

Significant elevations of the following inflammatory cytokines and markers were observed with increased radiation dose: (1) Inflammatory cytokines (IL-6, TNF- α , IFN- γ , and IL-10), (2) CRP, total ROS, and erythrocyte sedimentation rate (ESR), and (3) Immunoglobulin (Ig) levels. Also observed with increased radiation dose was decreased percentage of CD4T cells. Since both radiation exposure and aging were related to elevation of most of the inflammatory markers examined in this study, we conducted our review by converting radiation effects to an acceleration of aging. Namely, judging from IL-6, TNF- α , IL-10, CRP, total ROS, ESR, and Ig, exposure to one Gy of atomic radiation was found to correspond to a nine-year increase in aging. These results suggest that atomic-bomb radiation might have further accelerated inflammation status, which is ordinarily promoted by the aging process.

A prize for encouragement

Associations between HLA types and Stevens-Johnson syndrome/ toxic epidermal necrolysis in Japanese patients.

Saito Yoshiro[1,2] , Tohkin Masahiro[1,2] , Kurose Kouichi[1,2] , Sawada Jun-ichi[1] , Hasegawa Ryuichi[1,2] , Sotozono Chie[2] , Kinoshita Shigeru[2] , Takahashi Yukitoshi[2], Furuya Hirokazu[2] , Muramatsu Masaaki[2], Matsunaga Kayoko[2] , Aihara Michiko[2] , Ikezawa Zenro[2] , Kaniwa Nahoko[1,2]

[1]National Institute of Health Sciences , [2]JSAR Research Group

Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are very rare, but severe cutaneous adverse reactions induced by numerous drugs. We constructed a system to collect DNA samples of SJS/TEN patients from all areas of Japan, and studied associations between *HLA* types and SJS/TEN in Japanese. In the analysis of all 58 cases, *HLA-DRB1*0901* was significantly associated with the occurrence of SJS/TEN (corrected p value (Pc)<0.01), but its odds ratio was rather small (odds ratio (OR)=2.38). In the individual drug cases, *HLA-B*5801* was strongly associated with allopurinol-induced SJS/TEN (Pc=0.003; OR=40.8). *HLA-Cw*0302*, which was strongly linked with *HLA-B*5801*, also showed a significant correlation (Pc=0.001, OR=127.9). We would like to continue discovering genetic markers for SJS/TEN to avoid these severe adverse reactions of drugs.

Young power for immunotoxicological research

Mechanism of immunotoxicity of organophosphorus pesticides

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Abstract

Organophosphorus pesticides (OPs) are widely used throughout the world as insecticides in agriculture and eradicating agents for termites around homes. The main toxicity of OPs is neurotoxicity, which is caused by the inhibition of acetylcholinesterase. The author first found that diisopropylmethylphosphonate, diethylmethylphosphonate, the by-products generated during sarin synthesis in the Tokyo sarin disaster, inhibited natural killer (NK) and cytotoxic T lymphocyte (CTL) activities, then found that OPs significantly inhibited NK, CTL and LAK activities both in vitro and in vivo. Furthermore, the author found that OPs inhibit NK, CTL and LAK activities by at least the following three mechanisms: 1) OPs impair the granule exocytosis pathway of NK cells by inhibiting the activity of granzymes, and by decreasing the intracellular level of perforin, granzymes and granulysin; 2) OPs impair the FasL/Fas pathway of NK cells; 3) OPs induce apoptosis of NK and T cells.

Contribution from overseas

Excellent Science and Outstanding Hospitality: A Guest's view of the JSIT meeting

Contributed by Stephen B. Pruett, PhD

(Professor and Head, Department of Basic Sciences,

College of Veterinary Medicine, Mississippi State University, USA)

I was recently given the wonderful opportunity by JSIT to visit Japan for the first time and to speak at the JSIT meeting. I would like to express my thanks to Dr. Sugita-Konishi for hosting Dr. Pestka and I at the National Institute for Health Sciences and for showing us some of the sights of Tokyo afterwards. In fact, the hospitality from everyone was exceptional and made the entire experience very enjoyable. I am particularly grateful to Kazuichi Nakamura, who spent almost 2 days showing my wife and I some of the most interesting places in the Tokyo area. I thoroughly enjoyed Japan. The people are friendly, the city is beautiful, there many historical sites and parks, and the food is magnificent. I was also very impressed with the subways and trains. In the area where I live, there is very little public transportation, so an efficient system such as the one in Tokyo was impressive to me.

Fig.1.Dr.Pruett

Fig.2.Tokyo Tower

I was very impressed with the meeting. My impression in comparing the Immunotoxicology Specialty Section of the Society of Toxicology with JSIT is that JSIT may have even more interest and expertise in applied aspects of immunotoxicology than the Immunotoxicology Specialty Section. I think the groups of researchers in both organizations have interests that are nicely complementary as well as many common interests, so our decision to continue the exchange visits as a way to learn more about the work in both groups seems very appropriate. I will be proposing to the Immunotoxicology Specialty Section Officers at the meeting in Baltimore a standard procedure for our annual scientific exchange visits, so JSIT leaders will know who will be arranging the visit and when various parts of the process will occur. I will also be able to tell our exchange visitors that they can expect a thoroughly enjoyable visit.
(Fig. 1 and 2)

Participation at the 15th Annual Meeting of the Japanese Society for Immunotoxicology

Contributed by Dr. James J. Pestka, PhD
(Professor, Department of Microbiology and Molecular Genetics, Michigan State University, USA)

I was given the wonderful opportunity to attend and present at the 15th Annual Meeting of the Japanese Society for Immunotoxicology (JSIT) in Tokyo during the second week of October. This visit was co-sponsored by JSIT and the Immunotoxicology Specialty Section (ISS) of SOT to promote scientific interchange and cooperation between immunotoxicologists from Japan and the U.S. Dr. Steve Pruett also participated this year as Past President of the ISS-SOT to facilitate future exchanges between the groups.

This visit started upon our arrival in Tokyo on October 8 where we were greeted by one of our hosts, Dr. Kazuichi Nakamura of Shionogi and Co. Developmental Research Laboratories, who familiarized us with the Tokyo area accommodations and plans for the meeting. The following day Dr. Yoshiko Sugita-Konishi, Director of Division of Microbiology at NIHS hosted us at her agency laboratories. Both Dr. Pruett and I presented seminars to an enthusiastic audience on our research related to stress and immunotoxicity. Following the seminars, we attended a luncheon with scientists from the NIHS with extensive follow-up discussions on our work and common research interests.

In the afternoon, we met with Dr. Konishi's lab group and toured her outstanding facilities. Dr. Konishi studies microbial toxins and their effects on the immune system. Later we visited with Dr. Jun-ichi Sawada who is the current President of the JSIT. Dr. Sawada runs an outstanding translational program linking human genetic polymorphisms and myelotoxicity of anti-cancer drugs. The day ended in dinner with Dr. Konishi and Dr. Masahiko Takino of Agilent Technologies where we discussed ongoing collaborative studies characterizing

Immunotoxic secondary metabolites produced by the black mold Stachybotrys.

On the following evening, the JSIT conference opening dinner was held under Dr. Sawada's leadership where we met with members of JSIT. Here we had further discussions about future cooperation between JSIT and ISS-SOT. The following day the conference began with the keynote lecture by Dr. Sawada and morning oral presentations. At the luncheon, Dr. Lawrence Jacob of Charles River Labs (UK) spoke on immunological assessment and use of biomarkers in translational medicine. This was followed by a symposium on the immunotoxicity of nanoparticles and plenary address by Dr. Pruett on immunotoxicology and innate immunity.

The second day began with oral presentations and a symposium on gut associated lymphoid tissues and their regulations chaired by Dr. Reiko Teshima, Division of Novel Foods and Immunochemistry at NIHS. Here I spoke on mucosal immune dysfunction by the trichothecene mycotoxins. Other talks focused on regulation of gut immunity by retinoids, establishment of a murine food allergy model, and immunomodulation by probiotic lactobacilli. The luncheon seminar was presented by Dr. Mark Wing (Huntington Life Sciences, UK) on non-clinical strategies to mitigate the risk for first-in-man studies with immunomodulatory drugs. Subsequent afternoon sessions dealt with immunotoxicogenomics and secondary modulatory effects and allergenicity of pharmaceuticals. I ended the day by a solo visit to the Asakusa and Ginza areas which represent some of the oldest and newest aspects of Tokyo, respectively.

Taken together, this was an enlightening and informative experience that enlarged my horizons on immunotoxicology research. Our Japanese hosts were warm and engaging- I am extremely grateful to Dr. Nakamura, Dr. Sugita-Konishi and Dr. Sawada for their extraordinary kindness. The visit reminded me of why I entered this exciting field and also confirmed the fact that scientists speak a universal language and continually strive for mutual improvement. I certainly encourage fellow ISS-SOT members to take the opportunity to participate in the JSIT annual meeting in future years. (Fig. 3, 4)

Fig.3.Dr.Pestka

Fig.4.Senso-ji temple

Hope for Communication between Japanese and Korean Immunotoxicologists

Contributed by Dr.Yong Heo, DVM, PhD
(Associate Professor, Department of Occupational Health, Catholic University of Daegu, Korea)

Participation at 15th Annual Meeting of the Japanese Society of Immunotoxicology gave me unforgettable memory and many meaningful lessons. Even though it was my first time to participate at JSIT annual meeting, I could see many familiar scientists whom I have met at Society of Toxicology annual meeting of the United States.

First of all, it was so impressive to me that scientists from many different scientific areas were gathering to discuss hot issues of immuotoxicology and share valuable information. Furthermore, no matter how different in their majors or workplaces, they were eager to work together for up-grade of JSIT, in that scientists were coming from medical, pharmacy, or other life science academic organizations, national or private research institute, and even many companies. It was also noticeable to me that almost all participants were at the conference hall until closure of each day presentation, and discussions between speakers and floor participants were so active even though I could not completely understand Japanese language.

Currently in Korea, several hundred scientists may be involved with immunotoxicological research works. But they are enrolled in major academic societies such as society of immunology, toxicology, pharmacy, or other health related organizations, therein we have no apparent organization of immunotoxicology. One of lessons, which I got through participating JSIT annual meeting, is that scientists interested in immunotoxicology will be helpful each other nevertheless their major academic societies if we meet periodically and share or discuss important issues or information on immunotoxicology. That's why, I think, it is the time to seriously consider the organization of Korean society of immunotoxicology. If the Korean Society of Immunotoxicology comes to successfully launch, two societies can collaborate in future. Until then, I wish as many as Korean immunotoxicologists participate JSIT meeting, and attempt to establish the harmonious relationship between two societies. For that reason, international symposium session would be preferred at coming JSIT meeting.

Finally I would like to show my sincere gratitude to Dr. Jun-ichi Sawada, president of JSIT, and Dr. Takahiko Yoshida, Dr. Keiko Nohara, and other JSIT staffs. Because of their sacrificial efforts, 2008 JSIT came to be much more wonderful to all participants.
(Fig. 5 and 6)

Fig.5.Dr.Heo

Fig.6.Dr.Heo with students