# Medical Session

Moderators: Professors Domyung Paek and Naomi Hisanaga

Due to heavy consumption of asbestos during the twentieth century, the incidence of asbestos-related diseases in Japan is increasing. For victims to obtain financial relief for these diseases, it is essential that they receive an accurate diagnosis of their condition [29]. During the first presentation, ***Pathological Diagnosis of Asbestos-related Diseases***, Professor Kouki Inai of Hiroshima University, having touched on the range of recognized diseases, concentrated his remarks on the continuing difficulties in making accurate diagnoses. Despite an array of tools such as clinical findings, laboratory data on serum or effusions and/or radiographic procedures including chest X-ray, CT or MRI scans [30], uncertainties remained. The professor discussed research undertaken by his team into the diagnosis of asbestosis, diffuse pleural thickening and benign asbestos pleurisy using histopathological specimens, and explained the relevance of non-specific pathology and imaging findings. Although progress on diagnosing mesothelioma with techniques such as immunohistochemical analysis had been made, new diagnostic tools should be developed through molecular and genetic research. Judging from the Japanese experience, it was likely that the incidence of asbestos cancer would rise in other Asian countries in the near future.

An attempt to quantify the incidence of disease amongst ex-workers from an Indian asbestos factory, formerly called Hindustan Ferodo and later renamed Hindustan Composites Ltd. (HCL) [31], was the subject of the presentation ***Asbestosis among ex-asbestos Workers of a Mumbai Asbestos Factory: A Prevalence Study***, by Dr. Archana Kakade from the Mumbai Occupational Health and Safety Centre. A 2004 study of active HCL workers which found a low incidence of asbestosis in workers led researchers to postulate that the "healthy worker syndrome" had tainted the results [32]. To test out this hypothesis, a new study was undertaken among ex-HCL workers who had resigned, retired or been forced to resign under the government's Voluntary Retirement Scheme (VRS) [33]. Interviews were conducted, occupational histories were taken and the health of workers was accessed during phase 1 (April-June 2008) and phase 2 (July 2008-January 2009) of this project. The prevalence rate of asbestosis among ex-HCL workers in the recent study was 49%, as opposed to 23% in the 2004 cohort of active HCL workers.

Recognizing the multitude of problems faced by asbestos-injured workers in Mumbai, recommendations made by the speaker included: banning asbestos in India, the mandatory introduction of a national medical surveillance program for workers occupationally exposed to asbestos, occupational health training for doctors, the introduction of efficient industrial engineering controls, the reduction of allowable asbestos concentrations from 1 fiber/cc to 0.1 fiber/cc, the use of respiratory equipment and personal protective equipment, regular asbestos fiber monitoring, good housekeeping practices, and a program of asbestos education for all personnel.

High incidences of asbestos-related diseases have been found in Korean regions where asbestos fiber was mined, according to the presentation by Dr. Yeon-Soon Ahn of the Department of Occupational Medicine, Dongguk College, Goyang, Korea [34]. The results of an epidemiological survey undertaken by a team of Korean and Japanese researchers were detailed in the paper: ***Environmental Fallout from Asbestos Pollution in Korea – Asbestosis Epidemics from Neighborhood Exposure in Chungnam Province, Korea***.

Due to para-occupational domestic and neighborhood exposures and exposure to naturally occurring asbestos, there was no difference in the prevalence rates of asbestosis and pleural plaques between miners and non-miners, i.e. members of the public who lived near the mines. This conclusion was the result of an epidemiological survey of 215 residents from five villages located within two kilometers of three asbestos mining sites. As a result of chest X-rays, 110 of the study subjects (51%) were suspected of having asbestos-related diseases; 95 were submitted for CT scans which established that 55 (64%) had asbestosis and 87 (92%) had pleural plaques [35]. Following up on the results of this work, the Korean Ministry of Environment was conducting an epidemiological survey of 10,000 residents who lived near 15 asbestos mines in Chungnam province. A Center for Asbestosis-related Environmental Disease had been established and a bill to provide assistance for environmental asbestos victims had been introduced.

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***Asbestos-related Lung Cancer among Japanese Construction Workers*** was the title of the talk given by Professor Naomi Hisanaga of the Aichi University of Education, Japan. Pictures shown of working practices during the 1980s backed up data which detailed incredibly high levels of asbestos exposure experienced by construction workers. Airborne asbestos concentrations exceeding 100 fibers/ml during the cutting of asbestos-containing boards using electric circular saws were not unusual. The researchers calculated that during 2005-2006 there was a total of 3,365 Japanese workers compensated by the gov-


*Cutting operations resulted in exposures as high as 787 fibers/ml. Here, the level was 131 fibers/ml*

ernment for mesothelioma and lung cancer, of which 1,387 (41%) worked in construction [36]; the second highest group affected were workers in shipbuilding who accounted for a total of 444 cases (13%).

Despite the acknowledged high-risk nature of construction work, many of the asbestos-injured from this industry did not qualify for compensation. Out of 34 lung-cancer patients whose details were recorded by the construction workers' health insurance society in Mie prefecture, 12 (35%) did not fulfill the criteria needed to obtain government compensation. Recognizing that construction workers remained on the asbestos front line, as evidenced by photographs showing hazardous working practices during current refurbishment work and demolition, the speaker concluded that current compensation requirements needed altering, so that all construction workers who suffered illness as a result of their occupational asbestos exposures obtained the benefits to which they were entitled. Regarding improved controls of hazardous exposures at current building sites promised by the government, the professor said that research on the carcinogenic potential of low-dose asbestos exposures was needed.

In the last 10-15 years, research on the treatment of mesothelioma had produced chemotherapy protocols for improving the duration and quality of life of mesothelioma patients, said Professor Bruce Robinson in his presentation: ***Latest Data on Mesothelioma Diagnosis and Treatment***. Much of this work had been conducted in Australia, the country with the world's worst incidence of mesothelioma. Whereas the U.S., Europe and Japan had incidence rates of 15, 18 and 7 per million respectively, Australia's rate was 40 per million [37]. In Australia, mesothelioma was no longer restricted to occupational cohorts such as asbestos mine workers, boilermakers, insulators, dockers and construction workers, "mesothelioma is now a disease of 'the man in the street' – almost everyone has asbestos in their lungs."

Improvements had been made in diagnostic tools such as immunocytochemical staining, computed tomography imaging techniques, positron emission tomography (PET scanning) and the use of blood biomarkers (mesothelin) [38] which, in some cases, had helped doctors make earlier diagnoses. Despite the progress, there was no cure for mesothelioma; front-line agents for treatment remained the use of a platinum agent plus an anti-metabolite such as pemetrexed and gemcitabine; new therapies featured the use of 2-drug combination chemotherapies with immunotherapy. Radical surgery was only recommended for selected cases and should be carried out in centers of excellence and in conjunction with adjuvant therapy. Gene therapy was still experimental.

The final presentation of the workshop reprised themes highlighted by speakers from Japan and Korea but placed them within an Australian context. Dr. Greg Deleuil, Medical Advisor to the Asbestos Diseases Society of Australia, spoke about ***Asbestosis in the Aftermath of Cyclone Tracy***, a massive storm which struck Darwin, in Australia's Northern Territory, on December 24, 1974. In just 8 hours, winds of 270 km/h demolished most of the built environment leaving behind a city-sized asbestos-contaminated demolition site. The fact that most of the buildings in Darwin had been constructed of asbestos-containing building products meant that there were high levels of airborne asbestos in the aftermath of the cyclone. The speaker and his family who had lived in Darwin relocated to the city of Perth after the storm.

Photographs were shown which evidenced the destructive havoc wreaked by the cyclone; pictures of clean-up personnel wearing leather gloves, floppy hats and work boots showed them shoveling the debris or using heavy machinery to remove wreckage. The responders – personnel from the armed forces, day laborers and volunteers – had

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no breathing equipment or protective clothing. There were no health and safety regulations in place to minimize occupational exposures. In the last few months, the speaker had diagnosed two of the clean-up crew with asbestosis; there was no way to predict how many other emergency workers or Darwin residents would contract an asbestos-related disease as a result of encountering Cyclone Tracy.

During the discussion phase of the workshop, the medical experts were asked technical questions about specimen preparation, ethics and techniques for screening patients, immunotherapy and the suitability of patients for radical surgery. There was a consensus that, as of then, no gold standard had been identified for treating mesothelioma patients.