Current Activities of the Japan Society of Medical and Biological Engineering

JMAJ 55(3): 259–260, 2012

Toshiyo TAMURA*1

The Japan Society of Medical and Biological Engineering was established in 1961 by researchers interested in interdisciplinary fields, especially medicine and engineering. One-half of the society members are physicians and other medical professionals and the other half are engineers. We conduct deep and fruitful discussions at conferences and attempt to develop new devices. New treatments and therapies are also analyzed and predicted. The year 2011 was the society's 50th anniversary, and we planned several activities. However, in March Japan encountered an unexpected disaster in the Great East Japan Earthquake, and so we changed and postponed most of the scheduled events, but despite the inconvenience this has caused, we have received a tremendous outpouring of sympathy and offers of assistance from all over the world.

First of all, we held a small seminar concerning the earthquake in our domestic conference in May. In addition, the Society of Institute of Electric and Electrical Engineering, Society of Engineering in Medicine and Biology (IEEE EMBS), with which we are affiliated, offered to hold a panel discussion concerning the earthquake. We reviewed the disaster and described the ordeal in the panel discussion at EMBC2011, which was held in Boston on 1st September. The contents of this presentation were as follows:

1) Emergency room at Tohoku University Hospital 72 hours after the earthquake: ER Department at Tohoku University analyzed the chronology taken at two sections (commander's office and emergency center) in the hospital within 30 minutes of the disaster. The Tohoku University Hospital served as one of the three tertiary referral hospitals and one of 14 designated hospitals for disaster medicine in Miyagi Prefecture. The facilities are expected to take care of patients who need critical care, especially from the most devastated region, and to send medical teams to the most devastated areas.

Despite serious water, gas, electricity, telecommunications, and transportation problems, immediate requests for reorganization and reallocation of facilities and staff and, huge medical and administrative demands resulted in mismatches during the first 72 hours after the disaster. To prepare for future unexpected disasters, we believe that it is necessary to formulate solid plans through multidisciplinary cooperation under the strong leadership of the facility chair. However, we still need to discuss what parts should be left flexible, including planning and providing training with limited available budgets and resources.

2) Nuclear hazard and impact on the environment: We discussed the safety of nuclear radiation under the criteria of the National Institute of Radiological Sciences.

3) Is robot technology effective in such a disaster?: Japanese robot technology, which is the best robot technology in the world, has not been applied in this situation for several reasons. The main problem with robots is maintenance in bad environments such as collapsed nuclear power station buildings. Rough floors and moist environments are not helpful for robot operation. The robot industry is now attempting to improve the system to make robots more helpful.

4) Treatment using medical equipment, especially home oxygen therapy: In the previous enomous earthquake, which occurred in Kobe ten

*1 President, Japan Society of Medical and Biological Engineering. Professor, Department of Medical System Engineering, Faculty of Engineering/Graduate School of Engineering, Chiba University, Chiba, Japan (tamurat@faculty.chiba-u.jp).

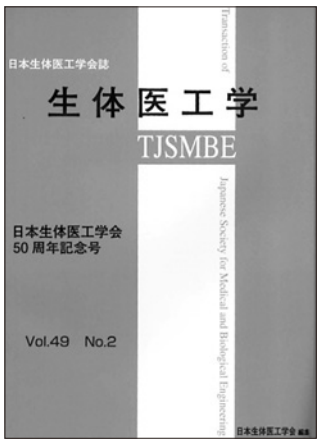

Fig. 1 Front cover of the special 50th anniversary issue

years ago, most medical facilities and equipment were put out of service. Learning from that lesson, in this earthquake the physical damage to medical devices was less, but the main problem lay with the electric power supply. However, manufacturers tried to minimize damage by using batteries and replacing devices with new ones as early as possible.

For society now, our technical committee has proposed that less powered and more simple handling devices such as portable respiratory devices be used.

With regard to our regular activities, we hold an annual conference and a biomedical symposium for younger researchers once a year. We also publish a periodical journal in Japanese. In March we published our special 50th anniversary issue of the journal. The design of the front cover was the same as that of the inaugural issue (**Fig. 1**). Contents included essays by honorary members and articles on future ideas and other topics by board members and young researchers, including the history of our society. The society also has around 10 technical committees to discuss new biomedical research. We are especially interested in transnational research and regulatory sciences. We have established a new technical committee for regulatory sciences and corroborate with the Ministry of Health, Labour and Welfare (MHLW), the Pharmaceuticals and Medical Devices Agency of Japan (PMDA), and the US Food and Drug Administration (FDA). The process of approving medical devices is very important. Fast and precise approval is needed and one mission of our society is to help and improve the approval process scientifically.