

## Burn Management in Japan: The Status Quo and Future Issues

Division of Emergency Medicine, Tohoku University, Graduate School of Medicine,  
Tohoku University Hospital Emergency Center

**Yotaro Shinozawa, M.D., Ph.D.**

The Japanese Society for Burn Injuries (JSBI) was established 33 years ago, in 1975, and includes nine regional burn societies. It began certifying “burn specialists” in 1999, and, of 1300 JSBI members, about 200 have been certified since. Most are either emergency physicians or plastic surgeons, sometimes both.

The society publishes the *Japanese Journal of Burn Injuries* five times a year and holds annual scientific meetings in various cities throughout Japan. The JSBI has also organized intensive pre-conference seminars on important issues in burn management since 1992; skills labs in skin harvesting and storing donated skin for grafting since 2000; and Advanced Burn Life Support (ABLS) Provider courses under the authorization of the American Burn Association since 2006.

In the early 1990s, the Kinki Skin Bank Network and the Tokyo Skin Bank Network were established to provide allogenic skin. The former mostly covered the needs of the western half of Japan, and the latter, the eastern half. In 2005, they were unified to form the Japan Skin Bank Network.

Although there is no national registry for burn patients in Japan yet, the Tokyo Burn Units Association (TBUA), organized by major burn facilities in Tokyo and funded by the Tokyo Metropolitan government, has developed its own registry system for all the burn cases treated at its member facilities. They constitute more than 90% of severe burn injuries occurring in Tokyo. According to their data from 1984 to 2003, during which the city population grew slightly from 11.7 to 12.5 million, each year, about 300-350 burn patients ( $40 \pm 25$  y/o,  $19 \pm 23\%$  TBSA) were admitted to hospitals and 4-5% of them died.

The JSBI started to issue guidelines for burn management based on worldwide EBM in 2006. But treatment strategies are not entirely uniform, and the tactics employed for better outcomes may vary from one institution to another. Examples of such tactics include immediate excision and grafting, burn depth assessment with high frequency sonography, individualized fluid management with careful monitoring, high-dose vitamin C administration, precise antibiotics regimens, and local application of b-FGF.

One of the maneuvers often practiced at our center is the modulation of inflammatory mediators using commercialized agents, such as protease inhibitors, based on the pathophysiology observed in severely ill patients. Following are some of the promising findings we obtained from our ongoing animal and clinical researches.

1) In severe burns, oxidant stress, rather than antioxidant potential, tends to decrease in the course of the treatment, resulting in an antioxidant dominant state in the latter phase; 2) the administration of antioxidants during the early phase seems to suppress the antioxidant dominance in the latter phase, most probably by increasing

interleukin-10; and 3) antioxidants used in the early phase can protect wound integrity. Furthermore, it may be beneficial to use an immune-enhanced diet containing arginine and iNOS inhibitors during the antioxidant dominant state, in which the patient's condition can easily be complicated with concomitant sepsis.

We, the Japanese health care professionals involved in burn care, are now looking for less stressful treatment options friendly to both the skin and the mind, inventing as well as researching innovative wound covering materials to cope with the shortage of donor skin, enhancing the anti-inflammatory properties of the parasympathetic nervous system through appropriate use of analgesics and sedatives, etc.

We also expect cultured skin to become available soon because the Japanese Ministry of Health, Welfare and Labor finally permitted it to be commercialized last year. The Phoenix Society Japan, a peer support organization founded in 1991 consisting of some hundreds of burn survivors and their families, is hoping to help burn survivors to feel normal.