

Rheumatic Diseases at the Dawn of the Millennium

In the Japanese language, the word for animal is *dobutsu*, which can be translated literally as “locomotive thing.” Human beings are also animals, or locomotive things, and, thanks to this tremendous locomotive ability, we could gather food and catch prey. Therefore, locomotive organs such as the bones, joints, muscles, and tendons are not only essential to human life, but they are also a source of development and prosperity for human culture and civilization. Even in today’s developed world, people run continually and with all their strength, much like the Red Queen of *Alice in Wonderland*. The struggle for food, money, love, and everything else in the stressful civilized world is a physical as well as a mental challenge.

Bone and joint diseases are the most common causes of longterm severe pain and physical disability. They affect many millions of people around the world. Throughout years of history, and even in this age of recent medical advances, research on the etiology, treatment, and management of other solid organ disorders, such as the heart, brain, digestive organs, lung, liver, and so on, has posted surprising progress. However, the field of locomotive organs, or rheumatology, has been largely neglected worldwide. What is more, rheumatic diseases do not attract as much public attention, as they are considered but a minor physical discomfort.

Actually, many people in Japan suffer from rheumatic diseases. A recent survey carried out nationwide in Japan revealed that the most frequent health complaint was joint pain (5.4%), followed by back pain (9.2%) and shoulder pain (9.1%). It is likely that more than 12 million people in Japan experience some kind of bone and joint disease. Among these, rheumatoid arthritis has posed the biggest problem. An epidemiological study carried out by a Japanese government research group estimates the number of patients with this disorder at more than 700 thousand within a population of 120 million. Of those afflicted, 70% are women and 10% are bedridden. Osteoarthritis, osteoporosis, back pain, and other associated diseases are also important. Clearly, bone and joint diseases are becoming an increasingly serious problem in Japan, medically as well as socially and politically.

Unfortunately, in this country as in many other countries, rheumatic complaints have been neglected. Research on rheumatology has been limited by a lack of funding and by the small number of available investigators. Until recently, few medical schools had a department of rheumatology, and few hospitals in Japan had a rheumatology section. For a long time, the main concern of the government and society was tuberculosis, and later cancer. Now, many patients visit hot springs for relief of rheumatic complaints, since Japan is a volcanic country boasting more than 1700 hot spring spas.

The Japan Rheumatism Foundation was founded 45 years ago as the Japan Rheumatism Society with the approval of the Ministry of Health and Welfare of Japan. The ultimate goal of the Foundation is to contribute to and promote scientific research, educate physicians and other health care professionals, support and encourage patients with rheumatic disorders, and promote public awareness of rheumatic diseases throughout Japan. Thanks to the Foundation’s efforts, with the support of the government, rheumatologists and patient groups have brought about increased public awareness and increased numbers of young physicians and investigators, resulting in a rapid progress in the field of rheumatology as well as improved quality of life for rheumatic patients in the past decade.

The international movement known as “The Bone and Joint Decade” was formed in Sweden and endorsed by the United Nations and the World Health Organization. This movement is now supported by more than 750 organizations and institutions worldwide. The National Arthritis Action Plan was prepared in the USA in 1999. In light of the growing medical, social, and economic impact of these diseases worldwide, our foundation is committed to supporting and promoting the global fight against these disorders. As part of this effort, and with the support of the Japanese Government, we held the International Conference for the Bone and Joint Decade on April 17 to 19, 2002, in Tokyo.

We invited delegates engaged in bone and joint disease control programs; administrators, physicians and other health care workers and consumers, including patients and their supporters. The participating organizations and countries included the World Health Organization, Belgium, France, Indonesia, Japan, Russia, Sweden, the UK, and the USA. The principal aim of this conference was to bring together health-care providers and consumers in the expectation that, by exchanging information, experiences, and ideas, and engaging in close international cooperation, all participants would develop effective future plans to combat the global threat of these disabling disorders. The opening ceremony was attended and addressed by Her Majesty the Empress of Japan, and after 3 days of discussion, we adopted the Tokyo Declaration and concluded the meeting. [Available from: <http://www.boneandjointdecade.org/news/default.htm> (Highlights, 2002-05-06)]

HIGHLIGHTS

Our bodies, these “living machines,” comprise a complex network of bones, joints, muscles, and tendons for locomotion. Olshansky pointed out that, in terms of evolutionary medicine, the human body can be considered full of defects.

From an engineer's perspective, the body has many faulty designs. The design is satisfactory if the plan is for the human body to collapse before the age of 50. However, God may not have foreseen that humans would attain their current longevity. For a person to live a long, happy, and healthy life, a much better plan would have been to design the body for extended use. God's program for the evolution of human beings suffered a great delay. In addition, the most fragile parts of the human machine, the ones that are most easily affected by aging, are unfortunately the locomotive organs, the bones and joints. As a result, we are prone to osteoarthritis, osteoporosis, and other rheumatic disorders.

Olshansky¹ added that the upright posture of humans is another source of problems with our locomotion system. Our body configuration of standing on two feet and bipedal walking has facilitated use of tools with the hands and enhanced our intelligence enormously. However, as a result of this upright position, extraordinary anatomical and physiological pressures are exerted on the bones and joints in our feet and lower back. As a result, extensive damage is inflicted in these parts of our locomotion system, resulting in a high incidence of osteoarthritis of the knee, hip, and spine. However, aging is not preventable or curable with the current state of medicine.

In addition to the aging process, rapid changes in our modern lifestyles also make us predisposed to new types of bone and joint disorders. Changes in dietary habits are resulting in the major problem of obesity. The ready availability of food has resulted in overeating, while reduced physical activity from changes in our approach to work are causing weight gain, resulting particularly in osteoarthritis of the knee joints. Diabetes mellitus is another result of obesity, and also causes arthritis. Frequently, our day-to-day meals are nutritionally unbalanced, and a lack of indispensable nutritional factors in food, such as vitamins and calcium, is also contributing to osteoporosis. Moreover, victims of traffic accidents are increasing in number as society continues to adopt more automobiles, while sports remain popular in all countries, accompanied by bone and joint injuries. The only ways in which we can now address these new problems are through weight control (through diet and exercise) and prevention of injuries (through control of traffic, sports, and occupations).

The adoption of new information technology systems in day-to-day business is another source of bone and joint problems. People working in an office are tied to their desks in front of machines all day long in an unnatural posture. Such severe circumstances are causing low back pain, neck pain, or other troubles of the spine. Under such circumstances, tenosynovitis of hands, back pain, and other disorders from excessive use of keyboards are also inevitable. In modern society, these new bone and joint diseases — caused by novel factors such as changes in lifestyle and the adoption of computer equipment — can be expected to increase considerably in the future.

Finally, recent rapid progress in medicine is developing various novel innovations to treat diseases, such as reconstructive or plastic surgery, organ transplantation, insertion of stem cells, and gene transfer. These measures will sometimes graft foreign materials into the human body, which might bring about new diseases, including immunological disorders, such as arthritis².

In conclusion, the current situation — in which the number of elderly is dramatically increasing as average life expectancy rises worldwide — will result in a rapid increase in the prevalence of musculoskeletal diseases as a result of the aging process. In addition, disorders caused by recent big changes in life style in modern society, as well as the advent of new medical technologies, are another novel threat. Since such rheumatic diseases have an enormous medical and socioeconomic impact, it is urgent that we establish an extensive control program for rheumatic disorders for the future.

I would like to conclude with a quotation from the address by Dr. Gro Harlem Brundtland, the Director General of the World Health Organization, who stated, "Musculoskeletal diseases and rheumatic diseases have a substantial influence on health and quality of life. They inflict enormous cost on health systems." We eagerly await the new age of rheumatology in this millennium. Our final aim is to preserve a gold brain, but to avoid having a clay body (bones and joints)³.

Finally, by way of acknowledgment, I would like to express my sincere appreciation for all the support, advice, and cooperation provided by Dr. Gro Harlem Brundtland, the Director General, Dr. Shigeru Omi, Dr. Nikolai Khaltayev, and other officers of the World Health Organization; and Dr. Lars A. Lidgren, Dr. Anthony D. Woolf, and other conference participants.

YUICHI SHIOKAWA, MD,
Emeritus Professor of Juntendo
University, Faculty of Medicine,
Honorary President, Japan
Rheumatism Foundation, Tokyo,
Japan.

Address reprint requests to Dr. Y. Shiokawa, 4-37-14, Sengoku, Bunkyo-ku, Tokyo, 112-0011, Japan. E-mail: ab5y-sokw@asahi-net.or.jp

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2. Kumagai Y, Shiokawa Y, Medsger TA Jr, Rodnan GP. Clinical spectrum of connective tissue disease after cosmetic surgery. Observations on eighteen patients and a review of the Japanese literature. *Arthritis Rheum* 1984;27:1-12.
3. Buchanan WW, Keen WF. Evidence based medicine: The median is not the message. *J Rheumatol* 2001;28:2371-2. [Note: The phrase "a gold brain and clay body," was used in this paper for "Evidence Based Medicine," but was also cited here because it seems also to be appropriate for "rheumatic diseases."]