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Editorial

Quest for Science, Spirit, and Skills



A B S T R A C T

The 96th Annual Meeting of the Japanese Orthopedic Association will be held from May 11 to 14, 2023, at Yokohama in Japan. I decided to set the theme for this meeting as “Quest for Science, Spirit, and Skills.” We believe that the “quest” to master these elements is the basic principle of those responsible for well-balanced musculoskeletal medicine and is also essential to further developments of orthopedic surgery.

The poster for the meeting incorporates Okayama Castle and an ukiyo-e painting of Miyamoto Musashi who was also famous for his *nito-ryu* or double-bladed swordsmanship. The idea behind using the ukiyo-e of Miyamoto Musashi on the poster is to draw an orthopaedic surgeon with “science” on one hand, “skills” on the other hand, and “spirit” in the heart. Moreover, novel perspectives and innovations may develop through working on more than two specialties. We believe that our interests to various clinical fields and science constitute the *nito-ryu* working style, which would accelerate the development orthopaedic science.

It is important to challenge the unknown both in medicine and in life. Anyone would agree that it is fundamental to strive for new discoveries and technological developments in medicine. Sometimes we work hard because we cannot see the future, but there are times when we need to work hard even if we can anticipate the future. I think that your destiny may change depending on whether you make an effort or not. I would like young people to keep this in mind and continue to challenge the unknown. Finally, I would like to introduce the words of Shoin Yoshida in the Edo era: “Those without dreams have no success.”

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The 96th Annual Meeting of the Japanese Orthopedic Association will be held from May 11 to 14, 2023, at Pacifico Yokohama in Japan, for 4 days. It has been 3 years since we began having problems caused by COVID-19. Recently, measures against corona infection have been effective to some extent, and social and economic activities are moving toward normalization. In addition, there are fewer restrictions on travel to and from overseas, and face-to-face interaction with people from other countries have been revived. I believe that many people are also feeling “with corona”. However, the emergence of mutant strains continues, and the situation where we have to be careful continues. I hope that this academic meeting will revert to its former style and lead to the development of orthopedic surgery.

I decided to set the theme for this meeting as “Quest for Science, Spirit, and Skills.” The intention behind this theme is to revisit the fundamentals and review all aspects of orthopedic medicine; science: the ability to think and judge matters from a scientific perspective; spirit: sincerity, integrity, and kindness of those involved in medicine; and skills: scientific and technological advancements and progress in techniques. We believe that the “quest” to master these elements is the basic principle of those responsible for well-balanced musculoskeletal medicine and is also essential to further developments of orthopedic surgery. Based

on the progress and problems of musculoskeletal medicine, we would like to discuss not only the latest knowledge and technology but also future perspectives in orthopedic surgery.

The poster for the meeting, in order to represent some of the character of Okayama city, incorporates Okayama Castle and an ukiyo-e painting of Miyamoto Musashi who was also famous for his *nito-ryu* i.e. double-bladed swordsmanship. Okayama Castle is the symbol of Okayama city and is also called Crow Castle due to its black color. Miyamoto Musashi, a famous and undefeated samurai, wrote “The Book of Five Rings” in 1643. In this book, the principle of martial arts was to him the control and mastery of the mind rather than simply swordsmanship. This book was written not only for martial artists but also for anyone who wants to apply the principles of this text to their life as timeless advice.

The idea behind using the ukiyo-e of Miyamoto Musashi on the poster for the Annual Meeting is to draw an orthopaedic surgeon with “science” on one hand, “skills” on the other hand, and “spirit” in the heart. For orthopedic surgeons, it is very important to achieve mastery with a single blade i.e. become an expert in one specific field such as musculoskeletal oncology, spine surgery, trauma surgery, hand surgery, or sports medicine. However, novel perspectives and innovations may develop through working on more than two specialties i.e. two blades in orthopedic surgery, which

we can regard as the *nito-ryu* working style. Incidentally, *nito-ryu* is also used in reference to Major League Baseball's two-way star player Shohei Ohtani who belongs to the Los Angeles Angels. We believe that our interests to various clinical fields and science (e.g., orthopaedics and rehabilitation, clinical and basic research, multidisciplinary treatments, collaborations in clinical/basic research) constitute the *nito-ryu* working style, which would accelerate the development in orthopaedic science.

From the view point of being an orthopedic oncologist with over 35 years of clinical and scientific experience, I would like to describe about Science, Spirits, and Skills.

1. Science with multidisciplinary team

As an orthopedic surgeon specialized in the musculoskeletal tumors, I would like to emphasize the importance of developing new multicenter strategies of diagnosis and treatment that encompasses all of Japan. In my younger days, I experienced the large-scale multicenter studies of German-speaking countries including Germany, Austria, Switzerland, and the Netherlands. I was impressed with the advancement of these types of study, which I had not seen in Japan at that time. I realized that multicenter studies were indispensable for attaining clear evidence for rare diseases. Since 2002, Japan Clinical Oncology Group (JCOG), Bone and Soft Tissue Tumor Group was established under direction by Prof. Yukihide Iwamoto. Since then, large-scale national studies have been continuously performed. Considering the recent results from these studies, a Phase II study is considered insufficient for attaining evidence; thus, a phase III trial is required to confirm a hypothesis. In a phase III study, things that we may have believed to be facts for a long time can be changed easily and completely.

Collaboration with medical oncologists, pediatric oncologists, and radiotherapists is becoming more important in development of prevailing intensive anticancer drugs. To develop new treatment strategies for patients with sarcoma especially in the pediatric/adolescent, young adult, and geriatric generations, collaboration with pediatricians or medical oncologists is very important.

In the treatment of pathological fractures due to cancer metastases to the bone, collaboration between orthopedic oncologists and orthopedic traumatologists is also crucial. In recent years, the number of patients with bone metastasis has been increasing along with an increased number of cancer patients. Pathological fractures due to bone metastases are often treated not only by tumor orthopedic surgeons but also by general orthopedic surgeons and orthopedic traumatologists. Orthopedic traumatologists are familiar with accurate reduction, internal fixation, and implant selection. Orthopedic oncologists, on the other hand, are well-versed in general cancer knowledge, prognosis of patients, and reconstruction with a tumor prosthesis. Therefore, orthopedic traumatologists and orthopedic oncologists should maintain close contact and collaborate in decision on a treatment plan for bone metastases.

In 2018, the Japanese Orthopedic Association proposed the concept of locomotive syndrome in cancer management. Bone metastasis is one of the biggest causes of locomotive syndrome in cancer patients. We believe that orthopedic traumatologists can contribute to overcome the locomotive syndrome related to cancer by actively working on bone metastasis treatment.

2. Skills in new techniques

In surgical treatment, the navigation system was introduced, providing accurate surgical management. It provides precise

surgical resections for bone tumors with errors within 2–3 mm to the planned line of osteotomy. In recent years, robot-assisted surgery has also developed. Along with its introduction in the fields of total hip arthroplasty, total knee arthroplasty, and spinal surgery, robot-assisted surgery will become even more common in orthopedic surgery in the future. In addition to conventional surgery without a robot-assisted system, it is necessary to learn new methods using robot-assisted surgery. The “two skills” are required here as well. In order to provide the latest and best treatment, we need to evolve to a new stage that has the flexibility to incorporate evolving technologies.

Artificial intelligence (AI) systems are developing and their introduction to clinics is expected in the near future both for diagnosis and treatment. We are now developing a diagnosis system with AI for bone tumors especially for general orthopedic surgeons, which is supported by the Japan Agency for Medical Research and Development. For the management of this type of rare disease, diagnosis with AI assistance may be very useful. This type of AI technique will be prevalent in the orthopedic field.

A telemedicine system is also expected to become prevalent in Japan. This system is very important for the super-aging society of Japan as a large part of the population is restricted in transfer due to musculoskeletal problems such as locomotive syndrome. With the advent of telemedicine, it is no longer a dream to create a society in which sick rooms and hospitals disappear and patients are monitored and cared at home.

3. Spirits in medicine

It has long been said that medicine is the art of *jinn*, meaning benevolence. Medical care is based on the spirit of service to care patients. In addition, there are the words by Dr. Untaku Ooe (1822–1899), a doctor of the Nakatsu domain in the Edo period, who said, “The art of medicine has the aspect of benevolence, but it also has the aspect of tormenting the patient.” Physicians must make an effort to administer charity. In order to make medicine benevolent, it is necessary not only to learn from the literature but also to have the humility to learn from one's own experience, from opinions of seniors and colleagues, and, above all, from patients.

From another perspective, Dr. Eric Topol [1], who is one of the leaders in the field of precision medicine, explained that the greatest benefit that AI brings to the medical field is the gift of time with our patients. I hope we use this time to ensure good communication with our patients.

It is important to challenge the unknown both in medicine and in life. Anyone would agree that it is fundamental to strive for new discoveries and technological developments in medicine. Sometimes we work hard because we cannot see the future, but there are times when we need to work hard even if we can anticipate the future. I think that your destiny may change depending on whether you make an effort or not. I would like young people to keep this in mind and continue to challenge the unknown.

Finally, I would like to introduce the words of Shoin Yoshida (1830–1859) in the Edo era: “Those without dreams have no ideals. Those without ideals have no plans. Those without plans have no actions. Those without actions have no success. Therefore, those without dreams have no success.”

Declaration of competing interest

None.

Reference

- [1] Eric Topol. *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. Basic Books; 2019.

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