

CANCER RESEARCH

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Cancer Research in Japan

GUEST EDITORIAL

In 1907, "Gann," the only journal on cancer research in Japan, was established by K. Yamagiwa, and, the following year, the association for cancer research was formed which was called "Gesellschaft für Krebsforschung in Japan," the predecessor of the present "Japanese Cancer Association." According to available documents, it was organized with the main purpose of cooperating in the international cancer campaign which was then becoming active around Germany.

The opening meeting of the Association was held at the Department of Pathology, University of Tokyo, with Yamagiwa as chairman. Although the association was first headed by Aoyama, professor of internal medicine of that University, and although the members of the association represented every branch of medicine, the leading views at the opening stressed the role of pathological studies in cancer research. This tendency is still marked in Japan, and, in fact, influential leaders in cancer research, such as Nagayo and Ogata, who succeeded and enlarged Yamagiwa's work in the field of cancer research, and Fujinami, who worked extensively with the transmissible chicken sarcoma, were pathologists.

At the first meeting of that association Yamagiwa delivered a lecture on "Meine Anschauung über Carcinom." He expounded the "Reiztheorie" of Virchow, his teacher, and emphasized the view that cancer cells are derived from normal cells which have undergone irreversible tissue changes. His well known patience in research, based on his firm confidence in that theory, resulted, with the helpful assistance of Ichikawa, in the investigations on "tar cancer" of the ear of rabbits.

It is interesting to learn that the course he pursued until his brilliant success was a lonely one, and that he faced considerable skepticism before his results were generally accepted.

I remember that Dr. Kennaway, in a personal conversation with me (1936), highly praised the work of K. Tsutsui, especially his careful histogenetic description of the tar cancer on the backs of mice. This seemed somewhat surprising, since

the tar cancer in mice had usually been understood in Japan to be nothing but a modification of that in rabbits. It took time before I could see the incomparable usefulness of the skin of the mouse as a tool for repeating experiments on carcinogenesis.

This small episode seems to me to reflect an aspect of the general trend of cancer research in Japan. Yamagiwa's work, based on a thoroughly studied theory and a prominent personal scientific background, resulted in inestimable effects on the promotion of cancer research in Japan. However, this successful "academic" laboratory work could not find a sufficiently fertile soil in this country for its further development until the isolation of benzpyrene. This suggests, I feel, the necessity for an institution of cancer research, devoted to the exhaustive study of the important problems of cancer. Such facilities did not exist at that time and are still very poorly realized in Japan, as will be described later.

It has been scarcely 50 years since scientific research in general actually received impetus in Japan. All aspects of research were pursued vigorously in this young country, and research in cancer was no exception. It may be a natural sequence of such a situation that research subjects of broader significance as found in more literary studies, were generally favored. This tendency may still be regarded as extant. The papers from Japan are thorough and reflect the most up-to-date topics of various kinds and sources.

However, there are two main directions of research which can be traced to Yamagiwa's era. One is the enthusiastic general interest in carcinogenesis or the experimental production of cancerous changes—for example, the experimental production of subcutaneous sarcomas in rats with the use of various kinds of dye compounds is being earnestly and successfully continued in the Cancer Institute, Tokyo. The other is the predominance of anatomicopathological studies of tumors, especially in man.

The immediate receptivity in Japan to the experimental production of the azo dye-induced

hepatoma, as carried on by Sasaki and Yoshida, was obviously owing to this traditional background. But the success of investigations on azo dye-induced hepatoma was unique in Japan in that it reflected the interest in chemical aspects of cancer as represented by Sasaki, i.e., it followed a series of experiments designed to elucidate his concept of "chemische Morphopathologie,"—experiments on the lasting effects of chemicals believed to have selective affinity (organotropy) for specific tissues.

After the War, a significant situation in Japan was the popularity of the ascites tumor in experimental cancer research. Since 1945, when the so-called Yoshida sarcoma was first presented, approximately one-third of the investigations reported for several years at the annual meetings of the Japanese Cancer Association were concerned with ascites tumors. In the meantime, several types of ascites sarcoma of rats have been maintained in various institutes, and in 1951 new interest in this field was aroused by the ascites hepatoma, a reproducible ascites tumor of epithelial origin.

In the ascites tumor were successfully combined the biological technics of the cellular unit, on the one hand, and a visualized cellular concept of cancer or, further, the parasitic concept of cancer cells, on the other. New interest arose in both the immunity and chemotherapy of cancer. Of these, studies on the chemotherapy of cancer have been more vigorously pursued, and the main aspect of current research is concerned with the use of ascites tumors in screening tests. This generalized adoption of the ascites system seems to be a distinct feature of chemotherapy studies in Japan.

There are two institutions devoted to cancer research which will be noted. One is the "Cancer Institute" of the Japanese Foundation for Cancer Research, and it is nearly the only one which has, to some extent, nation-wide support. This institute, together with its attached "Cancer Hospital" (the "Koraku Hospital") was founded in 1934 by Nagayo. Both were completely destroyed during the War. In May of this year, the institute celebrated its reconstruction. The institute, headed now by W. Nakahara, has twelve research members, who represent the fields of pathology, biochemistry, and experimental research. The other, the Medical Institute of Sasaki Foundation, called "Sasaki Institute," started first as a private laboratory for Sasaki's biochemical research and is at present devoted to cancer research. This institute is composed of seven research members and is noted for the first success in the experimental production of the azo dye-induced hepatoma in 1932.

An institution for the thorough investigation of cancer problems still remains undeveloped. Most

research is being carried on in the medical schools of universities, mainly in the departments of pathology or biochemistry, as well as in the clinical laboratories. It must be considered an inevitable consequence of this situation that most research projects, planned and carried out with limited facilities and equipment, have, as it were, the characteristics of "part time" research.

There is still relatively little public interest in cancer research in Japan. The above-mentioned Koraku Hospital attached to the Cancer Institute is actually the only cancer hospital in the country. The number of beds in this hospital is little more than 200, while the mortality from cancer in Japan is more than 70,000 annually.

It was two years ago that the mortality of cancer in Japan surpassed that of tuberculosis in the statistics of the Ministry of Public Health. Since then, public concern with the cancer problem has rapidly increased, so that the Government is making plans to augment the research funds for cancer as well as to enlarge and strengthen the cancer sections of the national hospitals which have been the successful base camps in the tuberculosis campaign.

However, it is obvious in Japan's present situation that time is required to raise the research funds to an adequate level and to build up the facilities for the treatment of cancer patients; the latter is no doubt the more urgent need.

Surveying similar conditions throughout the world, one is convinced that Japan is not the only country where many thousands of cancer patients do not receive adequate treatment, although this situation has generally improved in recent years.

Relative to this, I have, folded away in my own mind, a secret blueprint of a chain of International Cancer Hospitals, with every country having at least one cancer hospital of the highest standards in all respects, supported by an international organization. The patients, regardless of the country in which they may live, would have an equal opportunity to obtain the best treatment available at that time. Each chain hospital would surely have an influence on the rest of the country, in that it would encourage the establishment or improvement of other cancer hospitals and, further, would provide a very useful basis for an international geographic survey of cancer.

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