

## Actual practice of Kochi oxydol radiation therapy for unresectable carcinomas (KORTUC) by intra-tumoral administration of hydrogen peroxide as a radiosensitizer

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Kochi oxydol radiation therapy for unresectable carcinomas (KORTUC) is a novel cancer treatment method developed in Japan. KORTUC directly targets resistance factors in cancer radiation therapy, such as low-oxygen environments and excessive antioxidant enzymes. This may enhance the effects of conventional radiation therapy. The present study reports the experience of the Nagasaki Prefecture Shimabara Hospital in using KORTUC treatment for a series of 210 patients between January 2010 and June 2019. When this radiosensitizer, a mixture of a dilute hydrogen peroxide solution (0.5 ml, 3%/unit) and sodium hyaluronate (2.5 ml, 0.83%/unit), is administered and applied directly to the cancer lesion, antioxidant enzymes are neutralized and degraded causing reoxygenation as a secondary by-product, thereby enhancing the cytotoxic effect of radiation. The radiosensitizer was administered twice per week before irradiation. As of June 2019, KORTUC was administered to 210 patients. The most common disease stage was stage IV in 137 patients (65%), followed by stage III in 25 patients, stage I in 17 patients and stage II in 7 patients (unknown disease stage in 24 patients). Of the 186 patients who could be followed up after the treatment, 28 (15%) patients had a complete response (by RECIST: Response Evaluation Criteria in Solid Tumors version 1.1), 59 (32%) had a partial response, 73 (39%) had stable disease and 26 (14%) had progressive disease. No significant treatment-related adverse events were observed. The present study highlights the reports of 4 cases (3 cases from among the 28 patients with complete responses): i) A case of advanced, inoperable breast cancer; ii) a refractory patient with recurrence a decade after postoperative irradiation; iii) a patient with advanced, inoperable rectal cancer; and iv) a patient with lymph node metastases. Overall, KORTUC showed good efficacy and tolerable safety for various types of radioresistant solid tumors, and has the potential for immediate worldwide use.

### Biography

Shiro Obata has received MD and PhD in Graduated School of Medicine, Nagasaki University. Currently, he has belonged to Nagasaki Prefecture Shimabara Hospital as Director of Department of Radiology and Radiotherapy from 1995. He received a training of IMRT and stereotactic irradiation in Kyoto University, Department of Medical Physics of Arkansas University, and The University of Texas, MD Anderson Cancer Center for a short term, respectively. His team are developing high precision radiation therapy as IMRT and stereotactic irradiation. His team performed a new treatment, KORTUC for various cancer (280 cases) so far from 2010. He is qualified Radiation Oncologist (JRS and JASTRO), Medical Physicist (JSMP), General Clinical Oncologist (JBCT), and given the title of Clinical Professor of Nagasaki University.

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