

## 放射線腫瘍学の卒前教育における問題解決型学習の有用性について

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### THE EFFICACY AND USEFULNESS OF PROBLEM BASED LEARNING IN UNDERGRADUATE MEDICAL SCHOOL EDUCATION OF RADIATION ONCOLOGY

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**Abstract:** The Japanese Association for Therapeutic Radiation Oncology (JASTRO) holds a seminar for medical students every summer, which has developed into a joint program with a session addressing radiation treatment planning. To clarify this topic for medical students, we have incorporated Problem Based Learning skills into the session. Not only has the students' comprehension improved but the instructors have also found this teaching experience valuable and productive in advancing their own clinical skills. Our experience suggests that the application of this Problem Based Learning session for radiation treatment planning in undergraduate medical school education has proven to be effective.

Key words: Radiation oncology, Undergraduate medical school education, Problem based learning, Communication skill

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## 放射線治療の晩期有害事象に対する高気圧酸素療法についての検討

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EFFECTS OF HYPERBARIC OXYGEN THERAPY (HBO) ON  
RADIATION-INDUCED LATE SEQUELAE

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**Abstract:** The objective of our study was to determine the effectiveness of hyperbaric oxygen therapy (HBO) in the treatment of the late sequelae of radiotherapy. We excluded any case in which sequelae were detected and first treated less than three months after the final irradiation. Our study group consisted of 29 patients with the following sub-groups: 8 with osteonecrosis of the mandible & maxilla, 7 with proctocolitis, 7 with hemorrhagic cystitis, 3 with esophageal ulcer, 2 with necrosis of the larynx, 1 with skin ulcer and 1 with radiation myelopathy. We evaluated toxicity grades according to RTOG/EORTC late radiation morbidity scoring scheme before and after HBO in each case, and assessed the effects by comparing these grades. Our findings were showed 5 (17%) of the group had a very good outcome, with reduction of more than two grades, 18 (62%) had a moderate outcome with one grade reduced, while 6 (21%) revealed no change in their level of symptoms. Exacerbation of symptoms was not noted in any case. Since there are few known effective treatments for late toxicity, it is our view that the usefulness of HBO therapy needs to be recognized, and that further studies such as ours should be undertaken.

Key words: Late toxicity, Radiotherapy, Sequelae, Hyperbaric oxygen therapy (HBO)

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乳房照射におけるdose paintingを用いたhybrid intensity modulated  
radiation therapy  
線量分布におけるhot spot低減効果の評価

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A NOVEL HYBRID INTENSITY MODULATED RADIATION THERAPY  
IN BREAST IRRADIATION  
—EFFECTS OF REDUCING HOT SPOT VOLUME—

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**Abstract:** A hybrid intensity modulated radiotherapy with dose painting (HIMRT-DP) for whole breast irradiation was developed to decrease dose maximum level and hot spot volume. The HIMRT-DP is a combination of a conventional tangential two opposing irradiation (Conv.) and IMRT employing dose painting. The HIMRT-DP was compared with Conv.. Twenty-one cases, which were treated with Conv., were retrospectively analyzed for maximum dose, hot spot volume, volume of lung over 20 Gy and 95% dose coverage. As a result, the mean values of the maximum dose and hot spot volume for the HIMRT-DP were significantly lower than these of Conv. However, HIMRT-DP should take care of about 95% dose coverage because mean of 95% dose coverage for HIMRT-DP was significantly lower than that of Conv.

Key words: hybrid IMRT, Breast irradiation, hot spot

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ペースメーカーおよび埋め込み式除細動器装着患者に対する  
放射線治療に関する予備アンケート報告

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A QUESTIONNAIRE SURVEY ON RADIOTHERAPY FOR PATIENTS  
WITH A PACEMAKER OR AN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR

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**Abstract:** We conducted a questionnaire survey on radiotherapy for patients with a pacemaker (PM) or an implantable cardioverter defibrillator (ICD). We received replies from 108 out of 174 JASTRO board certificated institutions. Ninety-one institutions performed radiotherapy for patients with PM/ICD. Policy, indications and techniques of radiotherapy for patients with PM/ICD varied significantly from institution to institution. We believe that this survey has prompted a better understanding of radiotherapy at such a special situation, and that more information and experience will serve to ensure safer application of radiotherapy for patients with PM/ICD.

Key words: Radiotherapy, Pacemaker, Implantable cardioverter defibrillator

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放射線腫瘍学広域データベース  
ROGAD( Radiation Oncology Greater Area Database )の報告  
その活動の終結にあたって

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REPORT ON ROGAD (RADIATION ONCOLOGY GREATER AREA DATABASE)  
—ON THE OCCASION OF TERMINATION OF ITS ACTIVITY—

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**Abstract:** ROGAD (Radiation Oncology Greater Area Database), a multi-institutional database, was developed, has been run and maintained by the Japanese Society for Therapeutic Radiology and Oncology (JASTRO) since 1993. Unfortunately, its maintenance and operation is terminated now. This paper clarifies the reason of the termination, and proposes next activity of JASTRO. The resulted technological development and know-how of database administration/operation are disclosed here along with the list of literatures published. Main topics are: methodology of clinical data collection, following-up, archiving, analyzing, retrieving, and presentation as well as clinical evaluations<sup>(57)-(62)</sup>. Effort was made to link as many existed databases in radiotherapy facilities as possible in Japan by means of developing software for automatic protocol conversion of clinical data and automatic minimization of deterioration of quality of clinical data. Employing concept of virtual private network, an attempt was made to run virtual private database for each radiotherapy facility. Also a method of follow-up data collection was developed and reduced operational tasks utilizing web mail. Basic function of ROGAD system is to collect many data elements of various kinds/attributes, analyze those data elements in many hierarchy structures, and store those data for presenting new understandings. This paper describes results of research and development applying the ROGAD database system to other medical practices. Examples are time study of tasks/jobs of medical professions such as nurses in large scaled hospitals, analyses of labor cost and optimization of task/job distribution to each department and section in a hospital. Quality and level of tasks/jobs of medical professions are also observed, analyzed and presented. Another example is the learning system for optimization of radiation therapy planning. Authors cordially thank each facility who contributed to compile clinical data. Authers also thank to members of ROGAD office who have been engaged to quick decision making on software development, database operation/administration and clinical data evaluation.

Key words: Database, Clinical data registration, Follow-up, Clinical history, Clinical evaluation

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## 全国放射線治療施設の2005年定期構造調査報告(第1報)

JASTROデータベース委員会

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## JAPANESE STRUCTURE SURVEY OF RADIATION ONCOLOGY IN 2005 (FIRST REPORT)

JASTRO Database Committee

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**Abstract:** A national structure survey of radiation oncology in 2005 using questionnaire was conducted from March 2006 to February 2007 by JASTRO. The response rate was 96.9%: 712 out of 735 completed the questionnaire. The total numbers of new cancer patients and cancer patients (new+repeat) treated with radiation were estimated to be 162,000 and 198,000, respectively. The numbers of linac, telecobalt, Gamma Knife, <sup>60</sup>Co RALS, and <sup>192</sup>Ir RALS in actual use were 765, 11, 48, 64, and 119, respectively. The linac has the dual energy function in 498 (65%), 3DCRT in 462 (60%), and IMRT in 170 (22%). The numbers of JASTRO-certified radiation oncologists, full time equivalent (FTE) radiation oncologists, medical physicist, radiotherapy QA staff, radiation therapist and radiation therapy nurses/clerks were 426, 774, 117, 257, 1,635, and 907, respectively. Use of radiotherapy geographically varied from 0.8 to 1.7 new patients per 1,000 population.

Key words: Structure survey, Radiotherapy facility, Radiotherapy equipment, Radiotherapy personnel

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## 全国放射線治療施設の2005年定期構造調査報告(第2報)

JASTROデータベース委員会

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## JAPANESE STRUCTURE SURVEY OF RADIATION ONCOLOGY IN 2005 (SECOND REPORT)

JASTRO Database Committee

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**Abstract:** A national structure survey of radiation oncology in 2005 using questionnaire was conducted from March 2006 to February 2007 by JASTRO. The response rate was 96.9%: 712 out of 735 completed the questionnaire. Annual patients' load/FTE (full time equivalent) radiation oncologist was 247. The corresponding data according to the institutional stratification including  $\geq 1$ FTE radiation oncologist (A) or  $< 1$  (B) were 200 and 159 (calculated as FTE=1 to avoid overestimation in B institutions), respectively. More than 300 patients/FTE radiation oncologist (warning level for decline of quality of care) were treated in one fourth of the A institutions. The data/radiotherapy technologist were 117. In designated cancer care hospitals, larger numbers of cancer patients were treated with the more functionally sophisticated linac and CT simulator compared to other hospitals. Geographical variation in patients' load/FTE radiation oncologists ranged from 148 to 478 while radiotherapy technologists ranged from 73 to 191. The number of cancer patients/linac exceeded 400/year (warning level) in the institutions with heavy load/FTE radiation oncologist  $\geq 300$ /year (A) and in those with number of new patients  $\geq 800$ /year.

Key words: Structure survey, Radiotherapy facility, Radiotherapy personnel

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## 乳癌術後放射線治療用病衣(マンマスーツ)の 開発について

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### TRIALS OF DEVELOPING THE CLINICAL SUIT FOR BREAST CANCER PATIENTS IN RADIOTHERAPY

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**Abstract:** Radiotherapy is stressful for patients. Radiotherapy of breast cancer patients requires the women to be nude in their upper body. This can cause embarrassment in the patients and add to their state of confusion. Patients will have to be naked during all of the 25–30 radiotherapy treatments. Even when they cover-up using bath towels, there is still a great deal of mental stress. We tried to devise and develop an original clinical suit to wear in radiotherapy. I gave questionnaires after treatment investigating the effect of using the clinical suit. The questionnaires asked the patients their impression of the clinical suit for breast irradiation. It was 'Excellent and Good' for 97% of the 30 patients. When using the clinical suit, we were able to confirm the marking of the radiotherapy line and correct the height or distortion of the patients. Use of the clinical suit in breast cancer decreases stress levels in female patients as opposed to the bath towels used prior to the development of the suit. The dose rate of surface (relative dose rate) of the clinical suit was less than a bath towel, and there is no disadvantage to using the suit in radiotherapy every day. The radiation induced dermatitis did not increase when using the clinical suit. Overall patients of varying ages reported positive feed back regarding the suit.

Key words: Breast cancer, Radiotherapy, Mamma-suit, Clinical suit