The 29th Annual Meeting of the Osaka Association of Radiological Technologists

Society: Osaka Association of Radiological Technologists:OART
Chairman: Kanji Tanaka (President of the OART)
Session: 17 nov. 2019 (SUN) 9:30 - 17:20
Venue: Art Hotel Osaka Bay Tower 4F Ballroom
          Add:1-2-1 benten minato-ku Osaka TEL (+81)06-6577-1111
Theme: "Challenge to the possibility"

9:30 -   ■ **Opening Speech (Ceremony)**
          Kanji Tanaka / President of OART

9:50 - 10:40 ■ **Scientific Sessions**
          Student Session
          [Chairman] Takuya Umeki / Rinku General Medical Center
          Member Sessions
          [Chairman] Koki Kamida / Higashiosaka City Medical Center

11:50 - 12:50 ■ **Luncheon Seminar**
          "Dose management system"
          [Speaker]   Siemens Healthcare Co., Ltd.
                      Canon Medical Systems Co., Ltd.
                      A-Line Co., Ltd.
          [Chairman] Tomohiro Sahara / OART

13:10 - 13:15 ■ **Awards Ceremony**
13:10 - 13:20 ■ **Introduction Ceremony**
          Hideki Fujita / vice-director of OART
          ■ **Congratulations**
          The Busan Radiological Technologists Association

13:20 - 14:00 ■ **International Sessions**
          [Speaker] /
                      Eun-tae Park / Busan Paik Hospital, Inje University :BRTA
                      Yang Seung Hee / Ilsin Christian Hospital:BRTA
          [Chairman] Yasuo Takatsu / OART

14:20 - 15:20 ■ **Special Lecture**
          "Partial Revision of Medical Law Enforcement Regulations"
          [Speaker]   Kunihiko Morozumi / The Japanese Society of Radiation Public
                      Safety
          [Chairman] Yoshiaki Suzuki / OART

15:40 - 17:00 ■ **Public Lecture**
          "Until the Birth of the Radiation House" ～The Miracle and Locus of 16
           years～
          [Speaker]   Saotome Kosaku / The University of Tokyo
          [Chairman] Kanji Tanaka / President of OART

17:00 - 17:10 ■ **Closed Speech**
          Kenji Nishimura / vice-director of OART

BRTA: Busan Radiological Technologists Association
OART: Osaka Association of Radiological Technologists

学 術 大 会 会 場

アートホテル大阪ベイタワー　４階 ボールルーム

大阪市港区弁天1-2-1（ORC200内）　TEL.06-6577-1111

JR 大阪環状線・大阪メトロ中央線「弁天町」駅直結

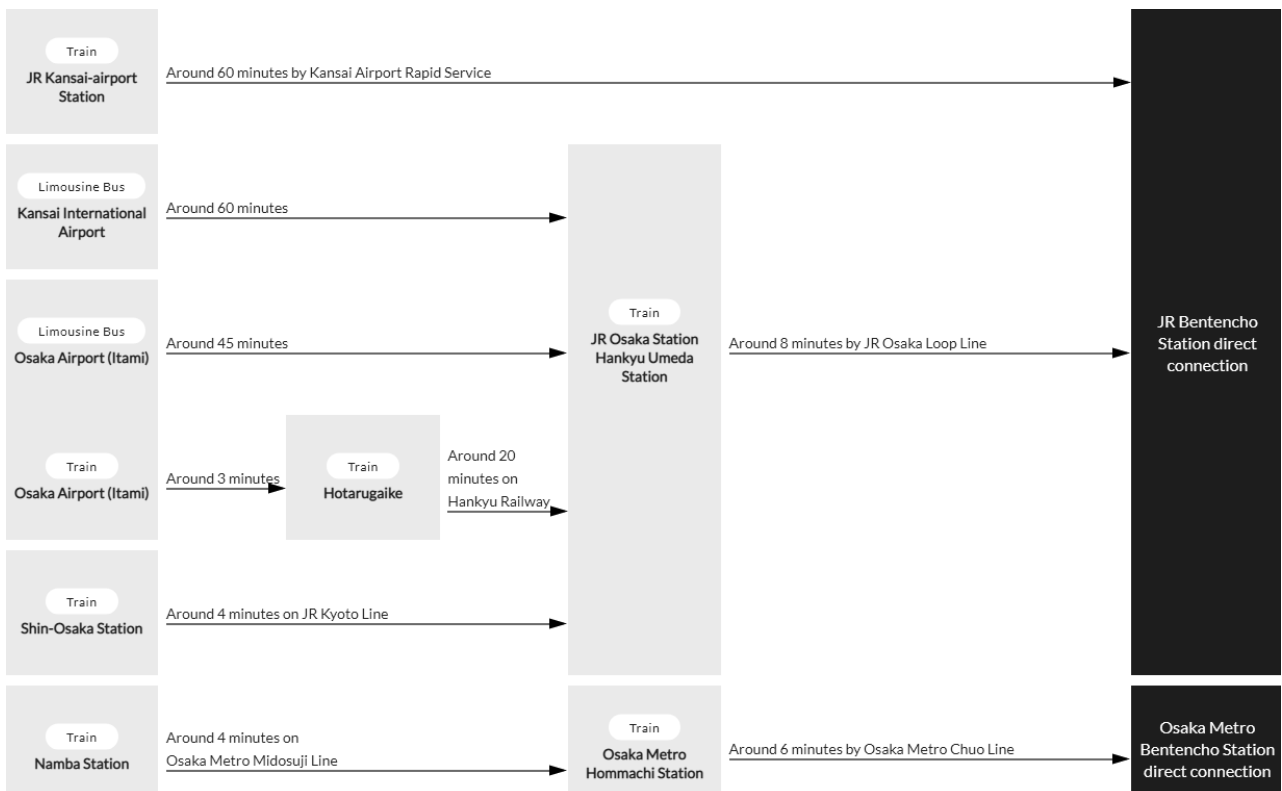https://www.osaka-baytower.com/access/

Convention venue

Art Hotel Osaka Bay Tower　4F Ballroom

Add:1-2-1 benten minato-ku Osaka　TEL (+81)06-6577-1111

directly connected to Bentencho Station on the JR Osaka Loop Line and the Osaka Metro Chuo Line

From		To
Train JR Kansai-airport Station	Around 60 minutes by Kansai Airport Rapid Service →	**JR Bentencho Station direct connection**
Limousine Bus Kansai International Airport	Around 60 minutes →	**Train** JR Osaka Station Hankyu Umeda Station
Limousine Bus Osaka Airport (Itami)	Around 45 minutes →	
Train Osaka Airport (Itami)	Around 3 minutes → **Train** Hotarugaike — Around 20 minutes on Hankyu Railway →	
Train Shin-Osaka Station	Around 4 minutes on JR Kyoto Line →	
Train Namba Station	Around 4 minutes on Osaka Metro Midosuji Line → **Train** Osaka Metro Hommachi Station — Around 6 minutes by Osaka Metro Chuo Line →	**Osaka Metro Bentencho Station direct connection**

Around 8 minutes by JR Osaka Loop Line (JR Osaka Station → JR Bentencho Station)

https://www.osaka-baytower.com/en-us/access/

Influence of maximum luminance on detectability
- Analysis using Deep Learning -

Mai Hanayama[1] 4010, Nao Kuwahata[1] 3425, Shinji Mikawa[1] 3059,
Mitsuo Yamashita[1] 3830, Hideki Fujita[1] 1749

1) Osaka Saiseikai Nakatsu Hospital

Purpose

Display luminance can influence observer performance during soft-copy interpretation of clinical images, and the most reliable method of evaluating observer performance is the receiver operating characteristic (ROC) analysis. However, this entails a certain amount of labor.Therefore, we used the low-contrast object test pattern (LCTP) as the sample and deep learning (DL) to more easily and accurately perform ROC analysis.

Materials and Methods

We used the Neural Network Console (NNC, Sony Network Communication Inc.) for DL. The LCTP was generated using in-house developed software. We produced 400 LCTPs with and without the low contrast object. We presented the LCTPs (200 images with and without the object) on a 2-megapixel color liquid crystal display (LCD) monitor with the maximum luminance set to 500 cd/m^2 and captured the LCTPs one by one using a digital camera. Next, we decreased the maximum luminance to 350 cd/m^2 and repeated the above process. We used 200 LCTPs (500 cd/m^2: 100 LCTPs with and without the object, 350 cd/m^2: 100 LCTPs with and without the object) as the training dataset on the NNC and constructed DL models for image recognition. Subsequently, image recognition was performed using the remaining 200 LCTPs as the evaluation dataset. To compare observer performance between different levels of maximum luminance, ROC analysis was performed using the recognition results at the two display intensities, and two ROC curves were generated and their area under the ROC curve (AUC) were calculated.

Results

Three DL models suitable for ROC analysis were constructed and these network structures comprised only six or seven layers. ROC analysis showed that the average AUC at 500 cd/m^2 and 350 cd/m^2 was 0.756 and 0.676, respectively, there was a difference in two ROC curves.

Conclusion

We studied the influence of maximum luminance on observer performance by ROC analysis using the LCTP and DL. The observed difference in ROC curves and AUCs suggest that observer performance may easily be evaluated using LCTP and DL.

Study on Photon and Photoneutron Using High Energy in Radiotherapy Room

Eun-tae Park

Department of Radiation Oncology, Busan Paik Hospital, Inje University

Purpose: During the radiotherapy, Photoneutron is generating due to photonuclear reaction using high energy. There is a strong impact on damage of human body from Photoneutron which Radiation weighting factor is higher than photon. Therefore, the purpose of this study is to analyze the tendencies of the dose of photon and photoneutron on field sizes at same position.

Materials and Methods: 15 MV gauging the dose of photon and photoneutron is generated from Clinac ix-S. Photon is measured by Photoluminescence Dosimeter. Photoneutron is determinated by BF3 proportional detector. To measure them according to the field size and distance, the 6 points are set based on isocenter first, field size is changed at equal points.

Results: As a result of the measurement, Being smaller the field size, there is lower the average dose of photon. Growing from the isocenter, the dose of it is decreased. In the case of photoneutron, the dose is increased in when the field sizes are down and is rise once the gap is away.

Conclusions: The exposure dose of patients is decline using the narrow fields at meticulous radiation therapy but a occurrence probability of photoneutron is growth. To actively approach decreasing the patients dose, the data of the photoneutron and range of 2 m or more on radiation protection should be big data.

Design & Implementation of Protocol for Gestational Age Prediction using Ultrasound in Asian Fetus

Yang Seung Hee

Department of Radiology, Ilsin Christian Hospital

Purpose: To evaluate the fetal biometric index according to gestational age criterion should be applied to another depending on the past and present, body and general characteristics of the mother as times change. Also it can not satisfy the condition of all the country to the same reference value. Accordingly, based on the physical condition of Korean mothers and analyze the biological index of the fetus and to propose a standard value of independent fetal Korean cognitive differences by country.

Material and Methods: From November 2015 to June 2018 May pregnant women between 15~38 receiving antenatal care at the hospital of the state Busan 1785 women, a retrospective study was performed in healthy fetal stage. We analyzed the biological index taking into account the general characteristics of the mother, a simple regression equations were derived based on gestational age based on each index in vivo. It was compared with actual use, and the United States, Japan, the UK data currently in the country for country-specific comparisons.

Results: Result did not show the most difference unlike age, body mass index, biological index of the labor force and the fetus of pregnant women in the analysis of the general characteristics of the mother, the baby the more significant difference were and abdominal circumference and femur length (p<.05). In the remaining gender it had a greater tendency throughout the gestational age. Table was also presented percentile of fetal biometric indeces between 15-38 weeks of pregnancy. Transverse fetal gestational age a two, abdominal circumference, femur length, according to a simple regression equation was derived as a result of the cerebellum transverse diameter showed the highest influence over the transverse cerebellar diameter is 0.984 coefficient of determination. Oh heel until two in the country, compared to 33 weeks by loud than in the United States, Japan and more than 34 weeks did not show a significant difference, abdominal circumference is smaller in Japan than in the United States it was greater than the entire gestational age. In short femur length than in the United States than in Japan, but it showed a long transverse cerebellar diameter is smaller than the UK was analyzed.

Conclusion: The evaluation of the fetus biological index results from analyzing the difference in gender and country specific characteristics in the actual clinical point of view, and

could provide a reference value of a normal fetus. And the significance was a point in evaluation of the biological index of the fetal gestational age of the 21st century, our country, hope usefully look forward to my assessment of overweight or underdeveloped fetus the womb. Also, depending on the times change, whether the change in body shape due to the eating and lifestyle, and fetal growth assessment will be steadily continued.