4TH SSR ANNUAL SCIENTIFIC MEETING 2021

THE NEW ERA OF PROFESSIONAL PRACTICE

E MBRACING EMERGING TECHNOLOGY

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A DAPT TO CHANGE

27TH MARCH 2021
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CONTENTS

4TH SSR ANNUAL SCIENTIFIC MEETING

27TH MARCH 2021

0900 – 1000	**ORAL PAPERS**			
	DIAGNOSTIC RADIOGRAPHY	RADIATION THERAPY	INNOVATION / QI	STUDENT
1000 – 1015	**BREAK**			
1015 – 1030	OPENING ADDRESS MS DENISE CHOONG, PRESIDENT, SSR			
1030 – 1100	KEYNOTE SESSION **New Era – Evolving Role of Radiographers** MR GABRIEL LEONG			
1100 – 1130	PLENARY SESSION 1 **The New ERA: Our Emerging Professional Identity** PROF JENNY SIM			
1130 – 1145	Q & A			
1145 - 1300	**BREAK / AGM**			
1300 – 1330	PLENARY SESSION 2 **The Impact of AI and Telehealth on Imaging Centres** DR POH PEI GHIM			
1330 – 1400	PLENARY SESSION 3 **Artificial Intelligence in Radiation Therapy** DR TONY WONG			
1400 -1420	SPECIAL FOCUS SESSION **Effect & clinical value of Canon AI on Resolution Recovery and Advanced Image Processing** DR RAVI SHRESTHA			
1420 – 1440	Q & A			
1440 - 1500	**CANON MEDICAL VIRTUAL RSNA TOUR**			
1500 -1510	**BREAK**			
1510 – 1645	**SCIENTIFIC SESSIONS**			
	DIAGNOSTIC RADIOGRAPHY		RADIATION THERAPY	
1510-1530	**Yes we CAn! – Ace-ing your next CT Coronary Angiogram** MS PHANG YI XUAN		**The Palette of Paediatric Proton Therapy** MS TAN XIAO WEI	
1530-1550	**Taking the Next Step in Embracing AI – Educating Ourselves** PROF ERIC CHUA		**FLASH Radiotherapy and Protons** DR TONY WONG	
1550-1610	**Diagnostic Radiographer Scope of Practice: A preliminary Survey** MS AZIZAH MOHD AFIF		**Geriatric Assessment in Radiation Oncology** MS WENDY HOY	
1610-1630	**Cutting Balloon Followed by Drug Eluting Balloon Angioplasty for Recurrent Venous Lesion in Dialysis Access: Interim Analysis** MR MUHAMMAD SYADAD		**Guideline in Image Guided Radiation Therapy in Head and Neck Cancer** MS SIN SZE YARN	
1630-1645	Q&A			
1645 - 1700	**CLOSING REMARKS**			

SPEAKERS PROFILES

KEYNOTE AND PLENARY

New Era – Evolving Role of Radiographers

Mr Gabriel Leong

Head Radiography, Changi General Hospital
Deputy Chief Allied Health Officer, MOH
Deputy Registrar, Allied Health Professions Council

Gabriel is currently the Head Radiography in Changi General Hospital where he oversees the clinical and operational aspect of the department. He pioneers the Radiological Abnormalities Detection Programme and started the Radiographer's led Barium Studies role extension in CGH and is a strong advocate for role extension within the Radiography practices.. As Deputy Chief Allied Health Officer, Gabriel lead the working DR EPA working Committees and also play an active role in the manpower projection for DR and RT in Singapore.

The New ERA: Our Emerging Professional Identity

Professor Jenny Sim

Head of Department
Monash University
Department of Medical Imaging and Radiation Sciences

She is the Head of the Department of Medical Imaging and Radiation Sciences at Monash University. She provides academic leadership, sets strategic directions, and actively engages industry stakeholders to achieve quality education outcomes. Also, she enjoys pushing professional boundaries, in particular, designing innovative curricula that enhance student learning with the aim of assisting students transition from university to the workplace. She has extensive university teaching experience at both undergraduate and postgraduate levels, including research supervision. Her research platform is transformative learning in Medical Imaging and has a strong applied focus, contributing to the scholarship of learning and teaching in Medical Radiations.

The Impact of AI and Telehealth on Imaging Centres

Dr Poh Pei Ghim

CMIO, iDOC Clinic Medical Group
COO, EasyCare Pte Ltd
Director, Xellink Pte Ltd

Dr. Poh is a medical doctor and software developer with a special interest in Linux, AI, and automation. He is a co-founder of iDOC Clinic and also the Chief Operating Officer of Easycare International, leading telehealth services for the organization. He has spoken in several conferences and won the bronze award at the ARRS 2015. His contribution to the AI training code helped the team win first prize in the Singhealth ACP 2018 oral presentation. Beyond his medical and software development activities, Dr. Poh is also a director of Xellink since 2011 and continues his contribution to the open-source community.

Effect & Clinical Value of Canon AI on Resolution Recovery and Advanced Image Processing

Dr Ravi Shrestha

General Manager & Senior Director – Global Healthcare IT
Canon Medical Systems Corporation | Healthcare IT Division

Dr Shrestha has 25+ years' experience, proven breadth and depth of domain expertise, in medical imaging and international healthcare informatics. He has a proven track record and leadership ability as co-founder, Executive, General Manager and Vice President. As a leader, he has driven the strategy and growth of multinational companies in the US, Europe and Asia in the fields of medical informatics, 3D/4D imaging, AI, and clinical systems design/innovation. He received his PhD in Medical imaging informatics and business management from Imperial College London as a Massachusetts Institute of Technology (MIT) Scholar for global consortium developing DICOM and HL7 standards in medical Information Systems. Dr Shrestha has authored multiple peer-reviewed papers and holds patents related to imaging, medical standards and medical devices. As a Global healthcare executive, he has a successful track record in securing, contracting and leading delivery of large, complex, mission critical medical programmes. He specialises in Corporate development inc. M&A, IPO, alliance management and international relationships. His passion for making a difference with innovative healthcare solutions drives his daily actions and aspirations.

PLENARY AND SCIENTIFIC SESSION

1)Artificial Intelligence in Radiation Therapy
2)FLASH Radiotherapy and Protons

Dr. Tony P Wong

Director of Medical Physics & Dosimetry
Seattle Cancer Care Alliance Proton Center
Clinical Associate Professor
UW School of Medicine
Dept. Of Radiation Oncology

Dr. Tony Wong is the Director of Medical Physics and Dosimetry at the Seattle Cancer Care Alliance (SCCA) Proton Therapy Center in Seattle, the USA since 2012. He is also a clinical associate professor at, University of Washington School of Medicine. Before joining the proton center, Dr. Wong served as the Lead Medical Physicist and Head of New Technology at the Swedish Cancer Institute, Seattle, the Clinical Medical Physics Lead and Staff Physicist at the William Beaumont Hospital, Michigan, and the Chief Radiotherapy Physicist at the Austin Medical Center in Melbourne, Australia. Dr. Wong has authored and co-authored over 35 peer-reviewed manuscripts and over 70 abstracts and a book chapter in radiation therapy. He was very actively involved in the early clinical implementation and development of IMRT, IGRT, SABR, and VMAT. His current interests are in improving clinical workflow and accuracy in proton spot scanning and adaptive radiation therapy.

SCIENTIFIC SESSIONS: DIAGNOSTIC RADIOGRAPHY

Yes we CAn! – Ace-ing Your Next CT Coronary Angiogram

Ms Phang Yi Xuan

Senior Radiographer
Singapore General Hospital

Ms. Phang , who specialised in CT Cardiac Imaging, is a senior radiographer with 11 years of CT clinical experience in Singapore,s. Ms. Phang frequently rotates between the National Heart Center Singapore and Singapore General Hospital, carrying out both inpatient and outpatient scanning. Sitting in the Body CT Team, Ms. Phang is also involved in setting and reviewing online CT protocols. On top of this, setting up CT scanners and scanners protocols is also part of her portfolio. Passionate in education, Ms. Phang holds the role of training junior radiographers for the CT modality.

Taking the Next Step in Embracing AI – Educating Ourselves

Professor Eric Chua

Associate Professor
Singapore Institute of Technology

Dr Chua is an Associate Professor at SIT, and holds a concurrent appointment as the Deputy Director of CoLEAD, the University's teaching and learning unit. In this role, he actively collaborates with colleagues on faculty development. Dr Chua was also the founding Program Director of the SIT DR and RT programs. In that role, he was leading efforts to graduate industry-ready practitioners through intensive industry engagement and strong curriculum design. Dr Chua is also interested in healthcare data analytics, in particular AI for radiography. In this role, he actively contributes towards teaching of research methods and biostatistics, as well as applied research in AI for radiography.

Diagnostic Radiographer Scope of Practice: A Preliminary Survey

Ms Azizah Mohamed Afif

Senior Principal Radiographer
Singapore General Hospital

Ms. Azizah is a Senior Principal Radiographer in Singapore General Hospital (SGH) from the Division of Radiological Science, Department of Radiography, and currently the Clinical Lead in Body Ultrasound. She is also the current Vice President for the Singapore Society of Radiographers (SSR). She graduated with a Masters of (Applied Science) Sonography from Royal Melbourne Institute of Technology (RMIT) Melbourne Australia and has been with SGH for over 15 years. She was awarded the MOH research scholarship in 2019 to pursue a Master of Clinical Investigation at, National University of Singapore. She also engages in radiographers and residents training in ultrasound and mentored Master and Bachelor radiographer student research thesis. Her main interests are ultrasound and radiography and have engaged in many research projects in SGH and with the SSR.

Cutting Balloon Followed by Drug Eluting Balloon Angioplasty for Recurrent Venous Lesions in Dialysis Access: Interim Analysis

Mr Muhammad Syadad Bin Sulaiman

Senior Radiographer
Singapore General Hospital

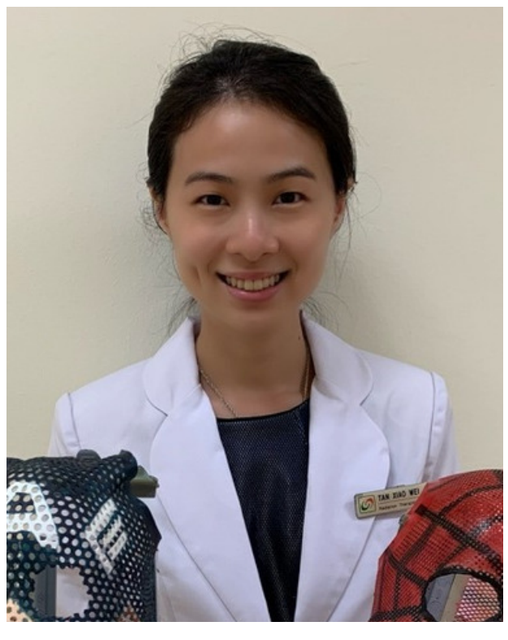
Syadad Sulaiman is a senior radiographer in Radiography Department at Singapore General Hospital. He specializes in vascular and interventional radiology and has a keen interest in endovascular treatments of peripheral arterial diseases and dysfunctional vascular access. He currently leads a team of radiographers at the Interventional Nephrology Suite and Major Operating Theatre of SGH providing medical imaging services.

SCIENTIFIC SESSIONS: RADIATION THERAPY

The Palette of Paediatric Proton Therapy

Ms Tan Xiao Wei

Radiation Therapist
National Cancer Centre



Xiao Wei is a radiation therapist from National Cancer Centre. She graduated with Bachelor of Medical Radiation Science in Radiation Therapy from RMIT, Australia, and had undergone proton training in St Jude Children's Research Hospital in USA. Xiao Wei's interest lies in improving work processes. Some of the projects include initiating a new setup technique for extended field pelvis treatment, standardizing head and neck treatment, writing ocular brachytherapy protocol and medulloblastoma proton therapy protocol, as well as setting up a pediatric program in NCC.

Geriatric Assessment in Radiation Oncology

Ms Wendy hoy

Principal Radiation Therapist
National University Cancer Institute Singapore

Ms Wendy is a Principal Radiation Therapist in National University Cancer Institute, Singapore. She graduated with Bachelor of Applied Science (Medical Radiation Technology), Master of Social Science (Counselling) and Master of Gerontology. She have more than 20 years of clinical experience in Singapore and Hong Kong. Her areas of interest are Image Guided Radiation Therapy and psychosocial in oncology.

Guideline in Image-Guided Radiation Therapy in Head and Neck Cancer

Ms Sin Sze Yarn

Advanced Practitioner Radiation Therapist
(Head and Neck)
National Cancer Centre Singapore (NCCS)

Ms. Sin Sze Yarn is the Advanced Practitioner Radiation Therapist (APRT) from National Cancer Centre Singapore. She graduated Masters in Radiation Therapy from MONASH University and has been practising since 2004, followed by specialising in Head and Neck (HN) APRT since 2012. Her international experiences include posters and oral presentation done in USA, Australia, Taiwan and Malaysia. She is the first HN APRT in Singapore that has acquired an in-depth knowledge of clinical assessment and imaging in HN radiotherapy. She has succeeded in approving images for the HN ROs and she runs a toxicity assessment clinic for NPC patients. In addition, she writes HN imaging protocol for 2D and 3D imaging along with comprehensive teaching and assessment for RTs.

ORAL PAPERS: DIAGNOSTIC RADIOGRAPHY

Determining Errors in Ultrasound Fusion Imaging (UFI)

Mr Ang Xu Kai

Radiographer
National University Hospital

Xu Kai is a fresh graduate from the Singapore Institute of Technology. He joined National University Hospital in 2020 as a Radiographer. He is also currently the Assistant Academic Chairperson of the Singapore Society of Radiographers.

Ms Chee Su Xian

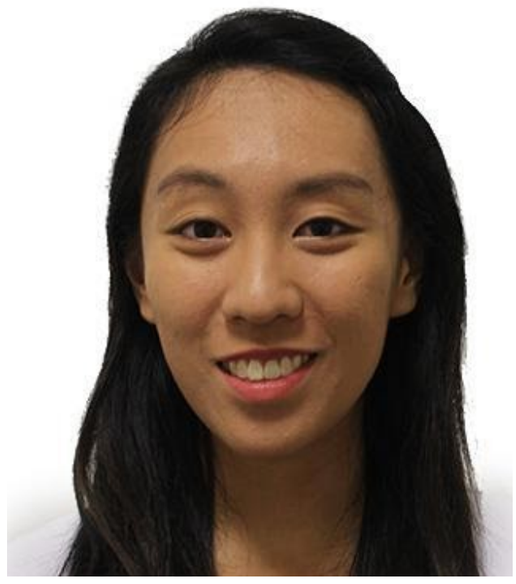
Radiographer
Tan Tock Seng Hospital

Su Xian recently graduated from the Singapore Institute of Technology (SIT) Diagnostic Radiography. She currently works as a radiographer at Tan Tock Seng Hospital (TTSH), performing mainly general radiographic procedures and fluoroscopy.

The Efficacy of Tin-filtration for Computed Tomography in Diagnosing Urolithiasis

Ms Sarah Tan Li Hui

Radiographer
Ng Teng Fong General Hospital, NUHS



Sarah was awarded the Healthcare Merit Scholarship by MOH Holdings. She pursued her Bachelor of Radiography and Medical Imaging (Honours) in Monash University, Melbourne, where she graduated with First Class Honours. Since her undergraduate days, she has been passionate about research and quality improvement projects. She returned to Singapore in 2019 and began her radiography career at Ng Teng Fong General Hospital. She is currently undergoing training to specialise in ultrasound imaging.

Crucial Sonographic Features of Extrathyroidal Extension - A Pictorial Review

Ms Esther Lin Chia- Yi

Senior Radiographer
Singapore General Hospital

Esther Lin is a senior radiographer in the Singapore General Hospital. With over six years of experience in ultrasound, she demonstrates advanced clinical knowledge in the fields of general, vascular, small parts and gynaecology sonography. Driven by passion, she is part of the ultrasound clinical education team, where she readily shares her knowledge and experience with students and medical residents. She believes strongly in nurturing the future generation with effective and quality training. In 2015, she was invited to share her research work in RadiologyAsia. Her recent work about sonographic features of extrathyroidal extension was presented in the annual scientific meeting of British Medical Ultrasound Society in 2019.

Classic Sonographic Signs in the Ultrasound Imaging of the Adult Abdomen and Pelvis

Ms Cherie Lee Pei Yee

Senior Radiographer
Division of Radiological Sciences,
Singapore General Hospital

Cherie Lee is a senior radiographer at the Singapore General Hospital (SGH) specialising in ultrasonography, providing a combination of quality patient care and accurate differential diagnoses through the use of cutting-edge technology. She is currently pursuing her Masters programme in Medical Sonography under a SGH full-scholarship with Monash University, Australia. Her radiography career started out under two SGH full-sponsorship for the Diagnostic Radiography course at Nanyang Polytechnic and an Honours degree with London South Bank university. Cherie was awarded Best Poster Prize at World Federation for Ultrasound in Medicine and Biology Congress (WFUMB) 2019 and First prize award in oral presentation at the Medical Ultrasound Society Singapore (MUSS) Shield 2020.

ORAL PAPERS: INNOVATION/QUALITY

The Nuclear Medicine Radiographer's Role in Same Day Technetium-99m MAA Scan and Y-90 Radioembolisation in Tan Tock Seng Hospital

Ms Genevieve Liew Qian Wei

Senior Radiographer
Tan Tock Seng Hospital

Genevieve Liew is a senior radiographer at Tan Tock Seng Hospital. She specialises in Nuclear Medicine and Computed Tomography, and is involved in clinical education. She recently completed her Masters in Medical Imaging at the University of Leeds, and is particularly interested in job redesign and streamlining work processes.

Ms Poh Yiqi Angie

Senior Radiographer
Tan Tock Seng Hospital

Angie is a senior radiographer at Tan Tock Seng Hospital and the radiographer in charge of the Nuclear Medicine section at the Department of Diagnostic Radiology. Angie is also a trained CT radiographer and is interested in fusion imaging as well theranostic advances in medical technology.

Chest X-ray Image Quality: Histogram and Post-Processing Optimization

Ms Joey Tan Yu Jun

Radiographer
National University Hospital

Joey is a graduate of Monash University. She joined NUH in 2019, specialising in general radiography and is also a part of the A&E team. She is currently undergoing training in ultrasonography.

Ms Tingcay Jannie Beatrice Antonio

Radiographer
National University Hospital

Jannie is a graduate from SIT-TCD and joined National University Hospital in 2018. She has recently expanded beyond routine radiography to ultrasound and is part of the A&E Core Team.

The Impact of Music Therapy on Pain and Anxiety Levels in Patients with Gynaecological Cancer Undergoing Complex Intracavitary Brachytherapy

Ms Joy Lim Jia Yi

Radiation Therapist
National Cancer Centre Singapore

Joy graduated from Trinity College Dublin with a Master in Advanced Radiation Therapy Practice. She is passionate about improving patient care and increasing the quality and safety of brachytherapy treatments. She also loves educating and coaching the juniors. Currently, Joy is working with her team using contemporary visual aids to improve the experience of patients coming for brachytherapy treatments. In her free time, you can find her in the gym or catching up with friends.

ORAL PAPERS: RADIATION THERAPY

Sexual Health Education for Singaporean Cancer Patients- A Necessity or Not?

Ms Vanishree Naidu

Senior Radiation Therapist
National University Hospital

She has been a radiation therapist for 16 years. She advocates living a new normal and cancer survivorship education.

A Literature Review: Evaluating The Current Published Evidence Surrounding The Use of Virtual Environment for Radiotherapy (VERT) for Patient Education

Ms Claire Hardie

Radiotherapy Product Specialist
Vertual Ltd

Claire worked as a clinical radiation therapist for 8 years and has an MSc in Radiotherapy and Onncology. She currently manages ASIA Pac as a product specialist for Vertual and enjoys combining experience in both clinical and business/technology aspects of radiation therapy. Claire is motivated by the ability to make a meaningful impact through excellent communication and building strong relationships and improving clinical or educational workflow, with an emphasis on being client/patient-focused.

Review: Stereotactic Body Radiation Therapy in the Management of Oligometastatic Prostate Cancer

Mr Zhang Bonan

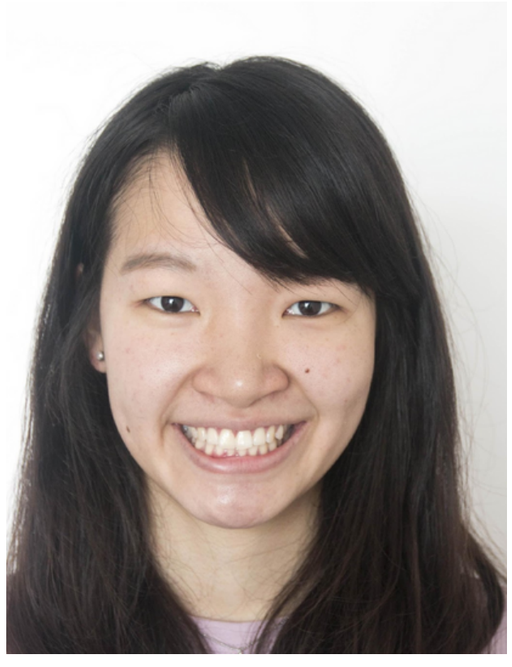
Radiation Therapist
National University Hospital, National
Cancer Institute Singapore

Bonan is currently a radiation therapist working at Radiotherapy Centre of National Cancer Institute Singapore, member of National University Hospital. He was graduated from Trinity College Dublin in 2019 and has many years internship experience during his student time, including overseas internship programme in United Kingdom and Ireland.

Radiomics in the Prediction of Tumour Risk Classification and Prognosis in Breast and Prostate Cancer

Ms Yeo Li Wen

Radiation Therapist
National University Hospital, National
Cancer Institute Singapore



Li Wen is a radiation therapist and has been with National University Hospital since her graduation. She has graduated from Nanyang Polytechnic in 2018 and went on to complete her degree with honours with Trinity College Dublin thereafter. Li Wen was presented the opportunity to have her recent thesis work published by the International Institute of Anticancer Research in 2020.

ORAL PAPERS: STUDENT

Systematic Reviews of Diagnostic Reference Levels Established for Commonly Performed Computed Tomography Examinations in Asian and Non-Asian Countries

Ms Saifoon Faheema

Year 4 Student
Singapore Institute of Technology

Recipient of multiple prestigious awards such as Ngee Ann Kongsi Scholarship, A*STAR Science Award (Polytechnic), Anugerah Khas MENDAKI Award and SINDA Excellence Award. Graduated from Singapore Polytechnic with Diploma in Biotechnology with Merit and a certificate in Biorisk Management in 2016. Upon discovering her interest in working with people and her passion in imaging through her Final Year Project in Polytechnic, she decided to pursue her Bachelor of Science degree in Diagnostic Radiography at SIT. Upon graduation, she will be working as a radiographer at KK Women's and Children Hospital (KKH).

Ms Cindy Wira Kusuma

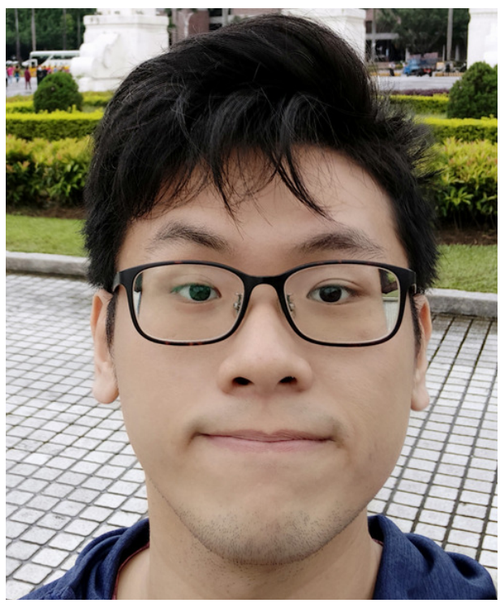
Year 4 Student
Singapore Institute of Technology

She graduated in 2013 from Nanyang Polytechnic with Diploma in Diagnostic Radiography. She started working in SGH as a radiographer and joined Magnetic Resonance Imaging (MRI) specialization in 2016 until today. Joined Singapore Institute of Technology (SIT) in 2019 to pursue further education to acquire a Bachelor's Degree in Diagnostic Radiography under the top Up Degree Program.

The Potential Ameliorating Effect of Cold Application at the Wrist on the Morphological Changes of Median Nerve Over Time During and After Handgrip Activity

Mr Ong Yong Jin

Year 4 Student
Singapore Institute of Technology



Artificial Intelligence Assisted Diagnostic Performance in Detecting TB from Chest Radiographs

Mr Teo Tze Swen

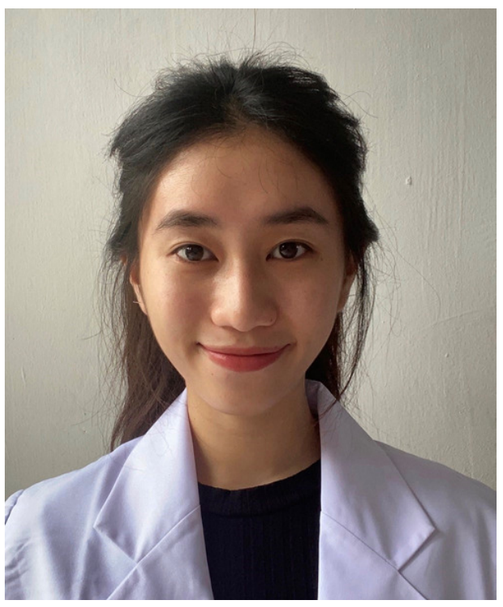
Year 4 Student
Singapore Institute of Technology

Tze Swen is a Year 4 Diagnostic Radiography student from SIT. He enrolled in the programme after being accepted into the Professional Conversion Programme. He looks forward to a dynamic and purposeful career in Diagnostic Radiography after graduation.

A Study on Student Radiographers' Knowledge of Infection Control in Transvaginal Ultrasound Scans

Ms Natalie Sim Wei Qi

Class of 2020
Parkway college



Natalie sent in her thesis done when she was a student of Parkway College. She is currently working as a radiographer in Ng Teng Fong General Hospital.

KEYNOTE
&
PLENARY

KEYNOTE AND PLENARY

New Era – Evolving Role of Radiographers
Gabriel Leong
Head Radiography, Changi General Hospital
Deputy Chief Allied Health Officer, MOH
Deputy Registrar, Allied Health Professions Council

The role of radiographers had been evolving especially in the area of leadership. We will need to look into 3 shifts in leadership to enable us to meet the challenges we face. We need to move from seeing an expert as a leader to an expert leader, focusing on developing collective leadership with a mindset of leading in the health ecosystem.

The New ERA: Our Emerging Professional Identity
Professor Jenny Sim
Head of Department
Monash University
Department of Medical Imaging and Radiation Sciences

This session will present a snapshot of the changing landscape of Medical Imaging and the challenges confronting our profession. The presentation will explore the concept of professional identity and how we, as a profession, can navigate our way through the shifting topography to ensure we remain relevant and continue to provide high-quality care for our patients.

Artificial Intelligence in Radiation Therapy
Dr. Tony Wong
Director of Medical Physics & Dosimetry
Seattle Cancer Care Alliance Proton Center
Clinical Associate Professor
UW School of Medicine
Dept. Of Radiation Oncology

The workflow of radiation therapy consists of several complicated and time-consuming processes that directly impact treatment quality and outcome. Artificial intelligence (AI) has been used to increase efficiency, quality, and standardization by automation and optimizing workflows in radiation therapy. While AI can also improve disease diagnosis, treatment selection, and patient outcome monitoring, the most popular use of AI in radiation at present are auto-segmentation, treatment planning, and synthetic CT generation. This presentation aims to share our experience using a machine-learning (ML) auto-segmentation tool and to share our in-house developed ML algorithm to predict treatment delivery uncertainties in proton pencil beam scanning beams. We aim to use our ML prediction model to incorporate treatment uncertainty in treatment planning.

The Impact of AI and Telehealth on Imaging Centres
Dr Poh Pei Ghim
CMIO, iDOC Clinic Medical Group
COO, EasyCare Pte Ltd
Director, Xellink Pte Ltd

In this session, Dr Poh visits AI and telehealth which is already prevalent in the medical field. He explores basic concepts and its applications including various forms of data analytics used in his practice and how these spring solutions to various problems in the medical field. He will also be exploring current and upcoming ideas that will shape and revolutionise the future of imaging and provide suggestions on how to ready oneself and imaging centres to the operations of the 'new normal'. It is undeniable that the emerging technology will influence radiographers and radiologists within and out of imaging centres.

Effect & Clinical Value of Canon AI on Resolution Recovery and Advanced Image Processing
Dr. Ravi Shrestha
General Manager & Senior Director – Global Healthcare IT
Canon Medical Systems Corporation| Healthcare IT Division

Canon's intelligent healthcare session focusses on innovative AI solutions that maximises image quality and optimises diagnostic workflow with DLR, leading to greater diagnostic confidence and fast, tailored treatment for patients. Canon Medical is expanding its Advanced intelligent Clear-IQ Engine (AiCE) technology to additional modalities, clinical indications and systems, making this the widest available DLR imaging technology. The session highlights Canon's AI-powered advanced image processing platform and clinical solutions. Together, our range of collaborative AI tools can deliver a total end-to-end workflow, from scanner to treatment to intervention, thereby enhancing clinical confidence while streamlining workflow for a more efficient treatment delivery.

ABSTRACTS

- SCIENTIFIC SESSIONS
- ORAL TRACK

DIAGNOSTIC RADIOGRAPHY

Yes we CAn! – Ace-ing Your Next CT Coronary Angiogram
Phang Yi Xuan
Singapore General Hospital

Feeling intimidated by CT Cardiac scan? This sharing will consolidate the scanning protocols, as well as some tips and tricks for you to ace your next CT Coronary Angiogram!

Taking the Next Step in Embracing AI – Educating Ourselves
Eric Chua
Singapore Institute of Technology

The importance of radiographers embracing AI has been well-highlighted by many thought leaders. One of the key ways to move forward on this is to educate ourselves on AI. In this talk, we will explore some of the ways we can do that as a professional community.

Diagnostic Radiographer Scope of Practice: A Preliminary Survey
Mohd Afif Azizah, Lee Jasmine, Chong Chun Meng, Boh Ryan, Ng Yun Xuan, Choong Denise
Singapore General Hospital, Khoo Teck Puat Hospital, National Healthcare Group Diagnostics, Singapore Institute of Technology, National University Hospital Singapore

Aim of research: There is increased demand for medical imaging through the years. This demand requires the diagnostic radiographers in the workforce to be equipped with adequate training and understanding of their roles. The purpose of this research was to define the current scope of practice of diagnostic radiographers and identify variations in current practices in Singapore.
Methods: A structured questionnaire was distributed to all radiographers in Singapore through emails disseminated by the Singapore Society of Radiographers. Information collected from the survey was job scope and responsibilities of the radiographers' duties in their respective imaging modalities, their specialised professional tracks and their demographics. Quantitative data analysis was conducted using SPSS and Fisher's Exact test of independence was used to determine correlations between variables.
Results: A total of 124 questionnaire responses were obtained, where 101 consented. Two participants were excluded; hence 99 responses were analysed. There was a significant positive correlation in radiography experience, and performing specialised CT examinations ($p=0.005$). Radiography experience was shown to be positively correlated with ability to perform appropriate patient assessment prior to complex and emergent CT scans ($p=0.002$). There was also positive correlation between experience and job grade ($p<0.001$), and with job grade and qualification level ($p=0.002$). Conclusion: The present study provided valuable insight on diagnostic radiographers' activities in imaging modalities, e.g. General Radiography, Fluoroscopy, CT, IR, MRI, Ultrasound, etc.Although there was not enough evidence to suggest if the implementation of role extension has been systematic, this study has provided preliminary data to establish the current practice for diagnostic radiographers in Singapore.

Cutting Balloon Followed By Drug Eluting Balloon Angioplasty for Recurrent Venous Lesions in Dialysis Access: Interim Analysis
Muhammad Syadad Bin Sulaiman
Singapore General Hospital

Haemodialysis using arteriovenous fistulae (AVFs) is the preferred method of renal replacement therapy. However, AVFs are susceptible to stenoses, and ultimately thrombosis, leading to increased morbidity and healthcare costs. Application of novel technologies such as cutting balloons (CB) and drug eluting balloons (DEB) have been used to address issues with endovascular treatment of these recurrent lesions. Hence the combined use of CB and DEB may lead to improved primary patency for such vascular circuits.

RADIATION THERAPY

The Palette of Paediatric Proton Therapy
Tan Xiao Wei
National Cancer Centre

Proton therapy is a form of charged particle therapy that is emerging in the modern radiotherapy era. It is especially useful in the treatment of pediatric cancers, as it provides excellent dose-distribution and increased dose-sparing of normal tissues. While the benefits of proton therapy have clearly been demonstrated, there are some limitations that should be considered too. St. Jude Children's Research Hospital is at the forefront of both paediatric cancer treatment and proton therapy, and many valuable lessons can be learnt from their experience.

FLASH Radiotherapy and Protons
Dr Tony Wong
Seattle Cancer Care Alliance Proton Therapy Center

Preliminary studies using an ultra-high dose rate greater than 40 Gy/second, generally known as FLASH radiotherapy (FLASH RT), have shown various degrees of reduction of normal tissue complication while maintaining tumor response compared with conventional-dose rate RT. FLASH can dramatically widen the therapeutic window of normal tissue complication probability (NTCP) and tumor control probability (TCP), which is the essence of radiation therapy. Therefore, FLASH RT has attracted significant attention in radiation oncology. However, the radiobiological effect of FLASH RT is not well understood, and the optimum FLASH RT dose delivery parameters are not yet established. Most of the preliminary studies in FLASH RT have been with electrons, which will have challenges in treating deep-seated tumors due to the shallow penetrating depth of electron beams. However, with minimal modifications, most clinical proton facilities can deliver FLASH RT to the full range of proton energies. One additional benefit of proton FLASH RT is the advantage of dose sparing with the proton Bragg Peak. This presentation will give an overview and update on FLASH RT, particularly the current research in FLASH RT with protons.

Geriatric Assessment in Radiation Oncology

Wendy Hoy
National University Cancer Institute Singapore

Older patients contribute to more than half of the cancer incidence and mortality. There are multiple challenges in treating older cancer patients, such as vulnerability to toxicity, inhomogeneity population and ageism. Geriatric Oncology is a new specialty combining both geriatric and oncology knowledge.Geriatric Assessment is a multi-dimensional evaluation and process to assess older adults' functional, medical, and psychosocial abilities. The usage of geriatric assessment to assess older cancer patients is getting more frequent in the oncology setting. In this session, the audience will be introduced to the common geriatric assessment tools and their use in Radiation Oncology setting.

Guideline in Image-Guided Radiation Therapy in Head and Neck Cancer

Sin Sze Yarn
National Cancer Centre Singapore

Robust image verification is crucial in head and neck (HN) radiotherapy since inferior treatment delivery has shown to compromise survival outcomes in cancer patients. Image guidance using cone-beam computed tomography (CBCT) has enabled precise soft tissue anatomical-based matching of tumour target. These comprehensive guidelines are derived from our own clinical practice with the collaboration of the radiation oncologists, dosimetrists, and radiation therapists. The overview of HN IGRT protocol aims to provide standardized guidelines for the RTs in CBCT image verification and will potentially alleviate high standard of accurate radiation treatment delivery.

DIAGNOSTIC RADIOGRAPHY

Determining Errors in Ultrasound Fusion Imaging (UFI)

Ang Xukai, Chee Su Xian
Singapore Institute of Technology
Singapore General Hospital

Aim of research: Inconspicuity of liver lesions can reduce confidence during percutaneous ablation therapy. Ultrasound fusion imaging (UFI) improves visualisation with a reference image displayed so that relative positions of inconspicuous lesions on Ultrasound can be deduced. However, clinical studies on UFI accuracy were limited. This pilot study aimed to quantify errors that affect the accuracy of UFI; intrinsic error (IE) and extrinsic error (EE). IE is the spatial mismatch in fusion while EE is the image disparity due to liver respiratory excursion.
Methods: Patients who underwent liver ablation were recruited (n=19). "Measure Accuracy" and "GPS" functions in LOGIQ E9 Ultrasound was utilised to evaluate IE and EE respectively, using liver bifurcation vessels. Measurements were taken before and after general anesthesia (GA).
Results: Five patients were excluded and the remaining data was analysed (n=14). Overall IE (mean, SD) was 11.7±6.9mm, with post-GA (12.7±7.2mm) IE larger than pre-GA (10.7±6.6mm) but not statistically significant. In pre-GA, segment VII had the greatest EE (9.51±4.16mm). Post-GA EE were comparable, averaging at 3.8±1.7mm and were significantly lower from pre-GA ($t= 6.14$, $p< 0.05$).
Conclusion: For lesions inconspicuous on US, IE of 11.7±6.9mm may be factored in to achieve a satisfactory ablation zone. Fusing prior to GA may help to lower IE. EE can be minimised significantly with GA. More studies are needed to better determine the accuracy of UFI.

The Efficacy of Tin-filtration for Computed Tomography in Diagnosing Urolithiasis

Sarah Tan Li Hui
Monash University

Aim of research: The purpose of this study was to evaluate the radiation dose and image quality of computed tomography urograms (CTU) using tin-filtration compared to conventional CTU (without tin-filtration) examinations in patients with suspected urolithiasis.
Methods: Group 1 consisted of 100 patients who were examined using the tin-filtered CTU protocols (Sn100kVp or Sn150kVp); Group 2 consisted of 100 patients who were examined using the same protocols but without tin-filtration (GE-NI41 or GE-NI43). The scanning protocol was based on the patients' body weight (<80kg and ≥80kg). The effective doses of all scans were compared between the two groups. Subjective image quality was evaluated by two blinded radiologists. The objective image quality was assessed for noise, signal-to-noise ratio (SNR), contrast-to-noise ratio (CNR) and figure-of-merit (FOM) using an anthropomorphic phantom for both the tin-filtered and non-tin-filtered protocols.
Results: Tin-filtration resulted in a reduction in an effective dose ranging between 72% to 88% for the ≥80kg and <80kg patient groups respectively. FOM and image noise improved with tin-filtration while CNR decreased with tin-filtration.
Conclusion: Ultra-low-dose CTUs (ULDCTUs) performed with tin-filtration significantly reduces patient dose while-maintaining diagnostic image quality of CTUs for suspected-urolithiasis.

Crucial Sonographic Features of Extrathyroidal Extension - A Pictorial Review

Lin Chia-Yi
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SengKang General Hospital

Aim of research: This didactic exhibit aims to improve the diagnostic confidence of ultrasound practitioners in recognizing ETE by describing the important sonographic features of ETE and reviewing possible pitfalls which may cause misinterpretations.
Methods: The Radiology Information System database was searched and thyroid ultrasound examinations performed in Singapore General Hospital between January 2016 and June 2019 were retrospectively reviewed. Serial static images of ultrasound studies that demonstrate histology proven ETE, as well as studies with false positives and negatives of ETE were collected.
Results: Pictorial review with actual case illustrations on thyroid nodules is presented to describe the pertinent sonographic features of ETE. These include capsular abutment by the nodule, bulging of the normal thyroid contour, and loss of the echogenic capsule. Where available, cases demonstrating false positive and false negative of ETE in sonography were also presented to enhance ultrasound practitioners' awareness of possible ultrasound pitfalls which may lead to wrong diagnoses.
Conclusion: It is imperative for ultrasound practitioners to recognize ETE, as this will facilitate timely diagnosis and management, which is in turn critical in ensuring good patient outcomes.

Classic Sonographic Signs in the Ultrasound Imaging of the Adult Abdomen and Pelvis.

Cherie Lee Pei Yee
Division of Radiological Sciences,
Singapore General Hospital

Aim of research: To assess the yield of non-contrast-enhanced CT KUB across different ordering specialities in patients with suspected renal colic.
Methods: We retrospectively reviewed 130 consecutive CT KUB studies requested for suspected renal colic at Bahria Town International Hospital Karachi in last one year. The data were analyzed for demographic characteristics, referring clinician and final diagnosis. Only patients with CT as primary imaging for clinically suspected reno-ureteral colic were included. Departments ordering these CT KUB examinations were divided into three divisions: Urologist, emergency room (ER) physician and others.
Results: Of 130 CT KUB performed in the last one year, 96 met the inclusion criteria. Mean age of the patients were 33 ± 11 years and the majority were males 87% (n=83). The highest number of CT KUB ordered by Urologists (59%) followed by ER physicians (23%) and others (18%). Almost 70% of patients presented with flank pain followed by generalized abdominal pain and LUTs. The overall positive yield for urolithiasis was 71% (n =68). Urologist has the highest positive yield of 65% (n=44) followed by others 19% (n = 13) and ER physicians 16% (n = 11); $p < 0.05$. Out of 96 CT KUB examinations 53% (n = 51) showed secondary signs of obstruction. Rate of incidental findings were 33% (n = 32) and majority of them were genitourinary (n = 19) followed by extra-genitourinary (n = 13).
Conclusion: There is a statistically significant difference in yield across specialities. CT KUB as an initial imaging modality

for suspected urolithiasis should be ordered in consultation with the urologists. The tool of good history taking and physical examination has proved to be essential steps in ordering CT KUB, which can avoid unnecessary radiation exposure.

INNOVATION/QUALITY

The Nuclear Medicine Radiographer's Role in Same Day Technetium-99m MAASscan and Y-90 Radioembolisation in Tan Tock Seng Hospital

Genevieve Liew Qian Wei, Angie Poh
Tan Tock Seng Hospital

Aim of research: The use of radioembolisation in the treatment of liver malignancy has increased significantly over the past fifteen years. Traditionally, Yttrium-90 (Y-90) radioembolisation has been performed on two separate outpatient visits a few weeks apart. Same day radioembolisation with Y-90 treatment following scintigraphy with Technetium-99m macro aggregated albumin (MAA) in a single patient encounter is emerging as an expeditious and convenient liver cancer treatment method that minimises systemic therapy interruptions. Patients with metastatic liver tumours, or small solitary hepatocellular carcinoma typically present with lower lung shunt fractions and are more suitable candidates.
Methods: In Tan Tock Seng Hospital, the nuclear medicine radiologist maps out the predicted distribution based on the liver arterial territory, calculating the dose required for the segmentectomy or lobectomy. The Y-90 dose is ordered in advance, and on treatment day, the radiographer coordinates between the day surgery ward, interventional radiology, and nuclear medicine to ensure swift inter-department transition of the patient. Radiopharmacy of both Technetium-99m MAA and Y-90, scintigraphy, and calculation of the liver lung shunt fraction and administered patient doses are performed by the radiographers. The bremsstrahlung scan is done the next morning to assess Y-90 distribution post radioembolisation.
Results: The benefits of combining the planning and treatment stages in a single session include a reduction in the number of admissions and clinical encounters. There is an added convenience for the multidisciplinary team and the patient, who is prepped once, with the femoral or radial sheath left in place until the treatment is over.
Conclusion: The nuclear medicine radiographer is instrumental in facilitating the entire process, and serves as a gatekeeper for radiation protection in the safe handling of these radiopharmaceuticals.

Chest X-ray Image Quality: Histogram and Post-Processing Optimization

Jannie Tingcay, Joey Tan Yu Jun, Annabelle Wong, Poh Zhu Hong
National University Hospital

Aim of Research: This study aims to obtain CXR images of consistent, optimal, diagnostic quality regardless of the portable machine used. Specifically, it identifies the causes of differences in image quality between the Shimadzu and Carestream DR by assessing the histogram distribution of CXRs and exploring post-processing techniques.
Methods: A sample of 20 patients with CXRs taken on both the Shimadzu and Carestream portable machines were collected. The CXRs taken from both machines were less than 3 months apart. The CXRs were all performed without the use of a grid and had their exposure indexes within acceptable limits. Histograms were generated and analysed. The ROI function on the Shimadzu portable was explored with the aim to generate histograms similar to those from the Carestream portable.
Results: Radiologists were surveyed to determine their ideal image quality preference and to find out if the post-processed Shimadzu images were comparable to the Carestream images. The results showed that radiologists preferred radiographs optimised to visualise the lungs and heart. This suggested that images acquired by Shimadzu DR had the potential to be of optimal diagnostic quality given the right post-processing settings.
Conclusion: Utilization of the ROI tool has enabled resulting images to be equivalent, if not, superior to the set standard which was confirmed through the analysis of histograms and findings from the radiologist rating test. This opens the possibility of continued use of the ROI tool over a specific area, enabling chest X-ray images of consistent optimal diagnostic quality regardless of the portable machine used.

The Impact of Music Therapy on Pain and Anxiety Levels in Patients with Gynaecological Cancer Undergoing Complex Intracavitary Brachytherapy

Joy Lim Jia Yi
National Cancer Centre Singapore

Aim of research: Brachytherapy has a pivotal role in the curative treatment of cervix cancer as it enables delivery of high doses to the cervix required to control cervical cancer, while relatively sparing other organs-at-risk; without causing undue side effects. However, cervix cancer brachytherapy is a painful procedure that can lead to significant discomfort and mental distress. Smith et al. reported that this procedure causes patients to undergo multifactorial discomfort, from severe lower abdominal cramping pain to lower back pain. Vaginal packing with gauze, an essential process of brachytherapy to displace the organs at risk from high dose region, cause similar lower back pain. General anesthesia and spinal anesthesia are recommended and preferred. However, due to limitations in resources coupled with a high workload, these interventions are not made available. Outpatient conscious sedation is used as an alternative. Moreover, there will be movement and longer procedural time is observed when patients experience pain. It is important to ensure optimal placement of applicators is essential as poor quality placement will result in less-desirable patient outcomes. Hence, patient pain management during brachytherapy applicator insertion is essential. Music is a low-risk supportive intervention that most patients find appealing, and that increases relaxation and decreases pain.

RADIATION THERAPY

A Literature Review: Evaluating the Current Published Evidence Surrounding the Use of Virtual Environment for Radiotherapy (VERT) for Patient Education.

Claire Hardie
Vertual Ltd

Aim of research: The aim was to identify the current published literature surrounding VERT education for patients receiving radiotherapy and evaluate the findings in a thematic manor. The concept of patient education, within radiotherapy, is not new. Within the literature and worldwide government standards, there has been a focus on improving patient education to enable self-management and improving quality of life. At the heart of this, is information and communication. It has been highlighted within he literature, the traditional methods of patient education, still do not meet the needs of patients. The increasing uptake of Virtual Reality training in education (VERT) of students has now expanded to patient education. VERT provides the opportunity for a visual environment where information can be tailored to meet patients' needs and explain the complex radiotherapy process.
Methods: 9 articles were identified for inclusion within the literature review. Keywords searched: Patient, education, radiotherapy, VERT. Articles were limited to publication between 2008-2019, in English.
Results: Thematic analysis identified three themes; patient knowledge, anxiety, and satisfaction. Direct comparison of the 8 publications was difficult for the researcher as there was no standardization in the timing of the use of VERT, differing focuses on the aims, differing statistical analysis, and differing methods of assessment. The literature review also identified several gaps within the methods used, primarily through the lack of cost-effectiveness and a formal needs assessment or the lack of a control group.
Conclusion: Initial evidence is supportive of the use of VERT for patient education in radiotherapy and identifies innovative and valuable educational opportunities. VERT education was well received by participants, with statistically significant improvement in patient knowledge and reduction in anxiety. Further evidence is required to assess, efficacy, efficiency and the full capabilities of VERT in patient education and needs to be large, multi-centred, RCT's to ensure the validity and reliability.

Sexual Health Education for Singaporean Cancer Patients- A Necessity or Not?

Vanishree Naidu
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Aim of research: To characterize the sexual health priorities and awareness of Singaporean cancer patients and to identify the knowledge gaps that may be addressed by a sexual health education program.
Methods: The study team members will identify eligible patients who are undergoing radiotherapy for breast cancer and English speaking. A needs assessment survey form will be administered on the 1st day of treatment assessing their priority of sexual health conversations and their interest in the topic. The survey form is designed to be self-administered.
Results: The needs assessment survey was administered to 19 patients, out of which the majority of patients said they did not receive any form of sexual health information from their healthcare team. All 19 patients responded that sexual health information should be provided by their healthcare team, with specific education on how their cancer and the treatments will affect their sexual health.
Conclusion: Sexual health education is an important aspect of wholistic cancer care, and conversations need to be initiated as part of the informed consent process, before treatment commencement. Programs for patients and partners requiring sexual health counselling and education needs to be present and made available in the cancer facilities in Singapore.

Review: Stereotactic Body Radiation Therapy in the Management of Oligometastatic Prostate Cancer

Zhang Bonan
National University Cancer Institute, Singapore

Aim of research: To investigate the potential of using Stereotactic Body Radiation Therapy (SBRT) in the management of oligometastatic prostate cancer and to compare the treatment outcome of SBRT with conventional management regarding progression-free survival (PFS), Androgen-deprivation therapy-free survival (ADT-FS), local control (LC) and toxicity profile.
Methods: MEDLINE (PubMed), EMBASE, and Clinicaltrials.gov databases were searched to identify prospective randomised trials as well as retrospective studies investigating SBRT and conventional management for oligometastatic prostate cancer. The studies were compiled and data on treatment outcomes were extracted. The outcomes were compared and contrasted in terms of PFS, ADT-FS, local control rate (LCR) and toxicity profile.
Results: 19 studies were included, involving 1599 patients. 14 studies reported on the use of SBRT and 5 studies reported on the use of conventional management. For SBRT, median progression-free survival (PFS) was reported as 7.36 to 24 months. Median ADT-free survival (ADT-FS) was reported as 12.3-39.7 months. Local control rate (LCR) varied, with some reports of LCR of 100% at 6 months and others an LCR of 92% at 5 years. No significant Grade 3 toxicity was reported, with only 5 Grade 3 events reported in 2 studies. For conventional management, most of the studies reported 3-year PFS from 46.9-64%, with one study reporting a median PFS of 38.6 months. Only one study reported an LCR of 50% at 3 years, and no study reported on ADT-FS. Although different toxicity grading systems were used in conventional management relative to SBRT, there were reports of Grade 3 and 4 events.
Conclusion: SBRT appears to be a safe and effective modality to treat oligometastatic prostate cancer, having the potential to defer palliative androgen-deprivation therapy. Although local control rates are excellent compared to conventional therapies, the progression-free survival rate is reported as inferior to conventional therapies. No significant Grade 3 toxicity was observed in SBRT. Further investigation with prospective randomised-controlled trials is required.

ORAL TRACK

Radiomics in the Prediction of Tumour Risk Classification and Prognosis in Breast and Prostate Cancer

Yeo Li Wen
Trinity College Dublin

Aim of research: To investigate the emerging role of radiomics in predicting the risk classification and prognosis of breast and prostate cancer.
Methods: A literature search on databases was conducted using predefined terms to retrieve studies relating to the radiomics. Studies were evaluated and selected upon meeting criteria defined in this study.
Results: A total of 63 publications were identified and 19 relevant publications were eventually selected. These studies were published during the period 2010-2019. Data from studies revealed significant area under the curve (AUC) values and high discriminative power in radiomic models. Significant AUC values for biochemical recurrence of disease and disease-free survival were reported for prognosis.
Conclusion: Radiomics studies show promising potential in discriminating tumour risk and predicting prognosis of cancer using specified features. Radiomics has been shown to be an alternative to conventional predictive tools, and in some cases, with the ability to improve upon these existing tools. However, most of the studies consist of small sample sizes and results may not be generalisable.

STUDENT

Systematic Reviews of Diagnostic Reference Levels Established for Commonly Performed Computed Tomography Examinations in Asian and Non-Asian Countries

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Singapore Institute of Technology

Computed Tomography (CT) is an extremely valuable diagnostic tool which is often used to easily identify diseases and improve the efficiency of diagnosis. However, despite having many advantages, it has been one of the major sources of ionizing radiation to the public and staff. One of the recommendations by the International Atomic Energy Agency (IAEA) to promote optimization and reduction of radiation dose is the establishment of Diagnostic Reference Levels (DRL). However, until now, many countries including Singapore, has not established a national DRL. Therefore, our systematic review aims to compare the established DRL by Asian and non-Asian countries. This can serve as a reference in the establishment of national DRL in Singapore. The Population, Intervention, Comparison and Observation (PICO) was used to formulate the clinical questions and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) was used as a search strategy to identify articles. 15 articles by Asian countries and 28 articles by non-Asian countries were identified. Upon comparison of the DRL using the mean of 75th percentile of Dose Length Product (DLP), Asia was compared with four other continents namely, Africa, America, Australia and Europe. Initially, it was hypothesized that Asia will have lower DRL compared to other continents since Asians have lower average body mass in comparison to the rest of the world. However, it was found that Australia has the lowest mean DLP (75th percentile) followed by Europe. Asia and America had similar mean DLP which is the second-highest and finally Africa which has the highest mean DLP. This could be due to many reasons such as the age of machines and lack of standardization of protocols. In conclusion, Singapore can strive to achieve lower or similar DRL compared to Australia in order to follow the ALARA (As low as reasonably achievable) principle to reduce and optimize radiation dose in CT imaging.

The Potential Ameliorating Effect of Cold Application at the Wrist on the Morphological Changes of Median Nerve Over Time During and After Handgrip Activity

Chong Yong Quan, Ong Yong Jin, Tanya Pang, Teo Leng Woon
Singapore Institute of Technology

Increased usage of digital devices predisposes students and intensive information communication technology (ICT) users to higher risk of carpal tunnel syndrome (CTS). The study aimed to determine the potential ameliorating effects of cold application on the median nerve during and after handgrip activity. Forty healthy participants were recruited to perform repetitive handgrip activity for 7.5-minutes with and without cold application. The morphological changes of the median nerve were monitored by studying its cross-sectional area (MNCSA) changes at different intervals during and after handgrip activity using ultrasound (US). We found that cold application significantly slowed down swelling of the median nerve during the handgrip activity ($P<0.001^*$). Our study demonstrated positive ameliorative effects with cold application on the median nerve.

Artificial Intelligence Assisted Diagnostic Performance in Detecting TB from Chest Radiographs

Teo Tze Swen
Singapore Institute of Technology

Aim of research: This study aims to investigate the diagnostic accuracy of Fujifilm's AI system (Lunit INSIGHT CXR) for detecting TB-related abnormalities, Consolidation and Fibrosis, on Chest Radiographs (CXRs) comparative to human readers. It hypothesises that the AI system will provide diagnostic accuracy comparable to human readers. Human readers interpreted the CXRs under two conditions: (i) independent interpretation, and (ii) AI-assisted interpretation. The study also hypothesises that human readers will demonstrate better diagnostic accuracy and higher confidence in their diagnosis when assisted by AI.
Methods: 300 CXRs extracted from publicly available datasets were assessed in two Phases:
Phase 1 consists of normal and TB CXRs; Phase 2 consists of normal, TB, and other pulmonary abnormalities CXRs. Each Phase, the AI system interpreted 150 images, while four human readers, with minimally 1 year of clinical experience in image interpretation, assessed 30 images taken randomly from the same set of 150 images. All diagnostic performances were measured against datasets' radiologist reports (reference standard) to generate area under the receiver operating characteristic curve (AUC). The human readers' confidence levels were tested against Wilcoxon signed-rank test.

Results: This study showed that human readers performed slightly better or similarly with AI assistance (Phase 1: AUC 0.980 vs 0.996; Phase 2: AUC 0.943 vs 0.940), The AI system's overall diagnostic accuracy was higher than that of the human readers, regardless of Phase and AI-assistance (Phase 1: AUC 0.997 - 0.975 vs 0.996 - 0.980; Phase 2: AUC 0.973 - 0.939 vs 0.943 - 0.940). The human readers confidence level was found significantly higher ($p<0.05$) with AI-assisted interpretation.
Conclusion: AI-assisted performance by human observers using Lunit INSIGHT CXR has obtained a very high diagnostic accuracy, suggesting that it will perform well in detecting TB-related abnormalities, and can be useful in supporting clinical decision-making and improving diagnostic accuracy.

A Study on Student Radiographers' Knowledge of Infection Control in Transvaginal Ultrasound Scans

Natalie Sim Wei Qi
Parkway College

Introduction: Student radiographers have early exposure to hospitals during clinical placements, which increase their risk of acquiring and transmitting infections if proper infection control guidelines are not followed. There are limited studies regarding the knowledge of student radiographers on transvaginal ultrasound (TVUS) infection control, which highlights the need to evaluate the knowledge and training of student radiographers in Singapore.
Aim of research: The aim is to analyse student radiographers' knowledge on TVUS infection control based on the recommended guidelines of Australasian Society of Ultrasound in Medicine (ASUM), American Institute of Ultrasound in Medicine (AIUM), European Committee for Medical Ultrasound Safety (ECMUS) and the Healthcare Infection Society.
Method: A mixed methodology questionnaire comprising of quantitative and qualitative questions involved 39 Year 3 student radiographers from Parkway College. Students' knowledge was evaluated based on their correct answers. Responses on sources of TVUS infection control information was obtained.
Results: A total of 38 student radiographers completed the questionnaire. Of respondents, 61% and 74% were aware of the type of probe cover and frequency of usage respectively. 56% and 32% respondents correctly answered questions on time and method of probe cover inspection. 16% respondents were correct on the frequency of probe cover use. While 74% were aware of frequency of TVUS probe disinfection, only 35% correct indicated the disinfection methods. 73% and 71% responses were correct on method and frequency of cleaning probe cords respectively, and 89% and 92% correctly indicated the method and frequency of cleaning contacted surfaces.
A p-value of 0.001 rejects the null hypothesis, thus demonstrating a significant difference between the knowledge scores of those who observed and did not observe TVUS scans. The bivariate graph demonstrated a positive correlation between the data sets. 70% respondents indicated clinical placements as their source of TVUS infection control education.
Findings: Students' knowledge was found to differ according to specific procedures of TVUS decontamination. The observation of TVUS scans during clinical placements significantly improved the knowledge scores of students. Additionally, the respondents highlighted the lack of theoretical education as the majority relied on clinical placements for TVUS infection control education.
Conclusion: There is an overall inadequate TVUS infection control knowledge of Year 3 student radiographers. The observation of TVUS cases should be made a requisite of clinical placements, and the existing infection control curriculum should include training of TVUS infection control and other semi-critical ultrasound devices.

POSTER

All posters submission can be found in the link below:
https://www.ssr.org.sg/ASM2021posters/

POSTER

eSlides 1
Survey of Prevalence and Contributing Factors of Musculoskeletal Disorder in Radiography Students.
David Erh Tah Wey,
Parkway College of Nursing and Allied Health/ University of Hertfordshire.

eSlides 2
Impact of COVID-19 Pandemic on Radiographers: Adaption of Operational Changes in Tan Tock Seng Hospital.
Chloe Yew Man Xuan
Tan Tock Seng Hospital

ePoster 1
Dose Optimization in Digital Mammography: Comparison of Automatic and Manual Exposure Modes.
Devanshi Patidar, Liu QiuMei
Singapore Institute of Technology

ePoster 2
Spatial Distribution and Quantification of Mammographic breast density, and its Correlation with BI RADS Using Image Segmentation and Machine Learning Approaches.
Lee Zhen Yu, Goh Yi Ling Eileen
Singapore Institute of Technology

ePoster 3
Dual Energy Computed Tomography Pulmonary Angiography (CTPA) in the Diagnosis of Pulmonary Embolism using Weight Based Contrast Protocol.
Oh Wei Ning, Sim Jun An Edric
Singapore Institute of Technology

ePoster 4
Appropriateness of Lumbar Spine Radiography in an emergency department: Results of a quality assurance audit.
Than Shin Ru, Feng ZhengYang, James
Singapore Institute of Technology

ePoster 5
Understanding the consequences of age-related morbidity outcomes in an elderly Singaporean population.
Anjelina The Wen Yi, Isabella Au Shimin, Muhammad Dzaki Abadi Bin Samri
Singapore Institute of Technology

ePoster 6
The Effectiveness of utilising various Breast Elastographic Techniques in Lesion Characterisation.
Goh Pei En Priscillia, Au Yeong Sok Mun, Rachel Koh Jia Ni
Singapore Institute of Technology

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