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(إِنَّمَا يَخْشَى اللَّهَ مِنْ عِبَادِهِ الْعُلَمَاءُ إِنَّ اللَّهَ عَزِيزٌ غَفُورٌ)

صدق الله العظيم ،،،

فاطر 28

DEDICATION

To my parents,

My wife,

My children,

My teachers,

and friends

For giving me never-ends gifts of encouragement, love and patience

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I would like to express my sincere gratitude to

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ABSTRACT

Bone scan is the accepted initial imaging modality for skeletal metastases. Some patients use chemotherapy in the initial stages before and after surgery for breast cancer patients according to the international protocol, this study aimed to evaluate the time elapsed between bone scan and chemotherapy dose that effected on renal function by GFR measurement . It is a retrospective study designed and conducted in the Nuclear Medicine Department, king Abdulla medical city (KSA) which included 150 female breast cancer patients with age ranged between 25-75 years, weighing 40-120 kg were used in the study. All patients were diagnosed as breast cancer according to the histopathology report and were received all chemotherapy treatment accepted group control .

The results of this study revealed that the most common drugs used for adjuvant and nan adjuvant(cisplatin combination) chemotherapy effect on GFR and this significant correlation increased significantly when comparing the value of GFR after chemotherapy treatment to the values of maximum bone counts to be -.007 and all count decreasing after treatment in all groups and there are a direct linear relationship between the acquired counts and the elapse time after chemotherapy , the coefficient of this relationship indicates that the researcher applied the specific threshold segmentation in order to increase the image quality by decreasing the values of the counts per background pixel and increased the value of counts per bone region pixel and increasing the ratio between the background counts to the bone region counts per pixel, the result showed a strong significant correlation of 0.733 between the applied threshold significant and the ratio of bone counts to the background counts the researcher set a values of

recommended threshold segmentation which should be applied for bone scan image to the patients treated with chemotherapy, these set of segmentation values was depends on the time intervals between the bone scan and the chemotherapy treatments in order to increase the image quality to be quite diagnosable, the threshold segmentation should be increased by a factors of 54.4%, 130%, 218.2% and 278.2% form the threshold segmentation of the normal control groups of patients for bone scan after 4,3,2 and 1 weeks from chemotherapy treatments respectively. This study concluded that The suitable time of bone scan post chemotherapy 4 week .

ملخص البحث

فحص العظام هو طريقة التصوير الأولية المقبولة لتشخيص الهيكل العظمي يستخدم بعض المرضى العلاج الكيميائي في المراحل الأولية قبل وبعد الجراحة لمرضى سرطان الثدي وفقا للبروتوكول الدولي، تهدف هذه الدراسة إلى تقييم الوقت المنقضي بين فحص العظام و جرعة العلاج الكيميائي التي تؤثر على وظيفة الكلى عن طريق قيا س مستوي التصفية الدموي

وهي دراسة استعادية تم تصميمها وإجرائها في قسم الطب النووي بمدينة الملك عبد الله الطبية والتي تضمنت 150 مريضا سرطان الثدي تتراوح أعمارهن بين 25-75 سنة، وبلغ وزنهن 40-120 كغم في الدراسة. تم تشخيص جميع المرضى على أنها سرطان الثدي وفقا لتقرير الأنسجة المرضية، وتم تلقي جميع المرضي العلاج الكيميائي ماعدا مجموة التحكم في الدراسة.

اظهرت نتائج هذه الدراسة ان الادوية الاكثر شيوعا المستخدمة في العلاج الكيميائي مثل تركيبات (تركيبة سيسبلاتين) للعلاج الكيميائي تاثير مباشر علي مستي التصفية الدمويه بواسطة الكلي وازداد هذا الارتباط معنويا عند مقارنة قيمة التصفيه الدموية بعد العلاج الكيميائي لقيم التعداد العظمي الأقصى لتكون - .0.007 وكل العد يتناقص بعد العلاج في جميع المجموعات، وهناك علاقة خطية مباشرة بين التراكيز المكتسبة والوقت الفاصل بعد العلاج الكيميائي، ويشير معامل هذه العلاقة إلى أن الباحث طبق تجزئة العتبة البرمجية المحددة من أجل زيادة جودة الصورة من خلال خفض قيم التعداد لكل بكسل في الخلفية وزيادة قيمة التعداد لكل بكسل في منطقة العظام وزيادة النسبة بين عدد الخلفية إلى التعداد منطقة العظام لكل بكسل، وأظهرت نتيجة وجود علاقة قوية من 0.733 بين الاثر المعالج لقيمة العتبة المطبقة بنسبة عالية ونسبة التعداد للعظام إلى نسبة الخلفية وضع الباحثة قيم تجزئة العتبة الموصى بها والتي يجب تطبيقها على صورة المسح العظمي للمرضى المعالجين بالعلاج الكيميائي، وقد اعتمدة هذه المجموعة من قيم التجزئة على الفترات الزمنية بين فحص العظام والعلاج الكيميائي من أجل زيادة جودة الصورة لتكون قابلة للتشخيص تماما، وينبغي زيادة تجزئة عتبة علي حسب المجموعات كلاتي 54.4٪، 130٪، 218.2٪ و 278.2٪ تشكل هذه العوامل لتجزئة العتبة لمرضي بسرطان الثدي لفحص العظام بعد 2،3،4 و 1 أسابيع من العلاج الكيميائي على التوالي. وخلصت هذه الدراسة إلى أن الوقت المناسب لمسح العظام الذين تم معالجتهم بالعلاج الكيميائي بعد 4 أسابيع من العلاج لتعطي صوره واضحة يتم تشخيصها بشكل مثالي .

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List of abbreviations

CT	Computed tomography
Tc-99m MDP	methylene diphosphonate
GFR	glomerular filtration rate
ECM	extracellular matrix
D 3	dihydroxyvitamin
T3	thyroxine
RANKL	Receptor Activator of Nuclear Factor B Ligand
CSFs	colony-stimulating factors
PTHR1	parathyroid hormone bind the same receptor
E2	Prostaglandin
ONJ	Osteonecrosis jaw
RFA	Radiofrequency ablation
PMMA	Polymethylmethacrylate (Acrylic)
DX	Oncotype drug
5-FU	5-fluorouracil
G-CSF	Granulocyte colony-stimulating factor
CTCb	CTCb
CRs	complete responses
DNA	deoxyribonucleic acid, is defined as a nucleic acid that contains the genetic code.
EPO	Erythropoietin
MDRD	The Modification of Diet in Renal Disease
CKD-EPI	Creatinine Equation (2009) to estimate GFR

IRMA	Renal Insufficiency and Anticancer Medications
BIRMA	Belgian Renal Insufficiency and Anticancer Medications
eGFR	Estimated glomerular filtration rate
SPECT	Single Photon Emission Computed Tomography
PET	Positron Emission Tomography
MatLab	Matrix Laboratory
DICOM	Digital Imaging and Communications in Medicine,
SNR	signal-to-noise-ratio
MCI	Ml curi
EDTA	Ethylenediaminetetraacetic acid
USA	United States of America