Sudan University of Science and Technology

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Evaluation of Entrance and Exit Doses in Tangential Fields in Breast Cancer Treatment .SAD and SSD Techniques

تقويم جرعة المدخل و المخرج فى حالة الحقول المماسة لعلاج سرطان الثدى. تقنية مسافة السطح ومسافة المحور

The Thesis Submitted for partial Fulfillment of the Requirements of MS.c Degree in
Radiotherapy Technology

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Dedication

This work is dedicated to

My parents , who pray a lot for my success , my brothers and sisters for their endless support and kindness . To my teachers and colleagues

Acknowledgement

I am greatly indebted to my Supervisor **Assistance prof / Sulieman M. Elhassan ,** who played a knee-role and also to his kind support and help during my work in this research.
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List of Abbreviation

SAD	Source to Axis Distance	4
SSD	Source to Skin Distance	5
SEER	Surveillance Epidemiology and End Results	8
DCIS	Ductal Carcinoma In Situ	9
LCIS	Lobular Carcinoma In Situ	9
TNM	tumor , lymph node , metastasis	11
NPI	Nottingham Prognostic Indicator	11
FNA	Fine Needle Aspiration	16
HER-2	Human epidermal receptor-2	16
HBMI	High body mass index	17
DNA	Deoxyribo Nuclear Acid	18
ROS	Reactive oxygen species	18
R.O.P	Relative out put	28
EFF	Electron Filter Fator	28
SPSS	Statistical Package for Social Studies	32
3D	Three Dimension	33

MLC	Multileave collimator----------	33
TPS	Treatment planning system ----------	34
IM	Internal mammary ----------	34
SCL	Supraclavicular ---------- ----------	34
P	propability ----------	40

ABSTRACT

The carcinoma of the Breast is a common disease in Sudan , about 51.5% of 10 common cases ,195 out of 379 cases during 2008 in National Cancer Institute-Madani-Sudan .Appendix-A(1), For radical treatment the external beam therapy is common , given via two tangential fields cover the area of the breast , chest wall and parasternal lymph nodes by a dose around 5000 cGy in 25 fractions , 5 fractions per week .

This study conducted at the National Cancer Institute in the period from July 2009 to December 2009. The main objective of this study is to evaluate the sum of entrance and exit doses of tangential fields in Breast cancer for SAD and SSD techniques to find out the differences whether it is within the acceptable limits or not . The radiation dose was measured and evaluated during the planning course using the THERAPLANPLUS .The data analysis by using Statistical Package for Social Studies and from Appendix (4.1) the correlation is 0.972 , is significant .And by using t-test the value :

(P-value = 0.000 < 0.05)

Indicate that there is difference between two variables so from Appendix(4.1) and other Appendices, there is difference between the two variables .The last results reveal that the dose increase by increasing separation in case of SAD , and the skin dose is higher in case of SAD than in SSD .

الخلاصة

يعتبر سرطان الثدى من اكثر السرطانات شيوعا فى السودان , يمثل 51.5 فى المائة من اكثر عشرة حالات شائعة ,951 من 379 حالة خلال العام 2008 بالمعهد القومى للسرطان بمدنى – السودان , انظر ملحق-ب(1) .

يعتبر العلاج الاشعاعى الخارجى للثدى علاجا جذريا يعطى فى شكل حقلين مماسين متضادين يغطى كل الثدى والغدد الليمفاوية المجاورة . يعطى المريض 0005 سنتقرى فى 52 جلسة خلال خمسة اسابيع .

تم جمع البيانات بالمعهد القومى للسرطان بمدنى خلال الفترة من يوليو 2009 حتى اغسطس 2009 .

الهدف العام من الدراسة تقييم مجموع الجرعة الداخلة والجرعة الخارجة وجرعة الرئة للحقلين المماسين لسرطان الثدى فى حالة تقنية ال SAD و SSD , لايجاد ما اذا كان اى الحالتين ذو جرعة مقبولة .

تم حساب الجرعة الداخلة والخارجة وجرعة الرئة خلال عملية التخطيط ومن خلال جهاز توزيع الجرعة التى تسمى THERAPLANPLUS .

تم تحليل البيانات احصائيا من خلال برنامج احصائى يسمى Statistical Package for Social Studies وباستخدام اختبار- t لاختبار ما اذا كان هناك اختلاف معنوى بين المتغيرين قيد الدراسة .

من الملحق (4.1) تم حساب معامل الارتباط بين المتغيرين 0.972 وهو معنوى . اما بالنسبة لاختبار-t فان قيمة :

(P-value = 0.000 < 0.05)

مما يدل على رفض فرضية العدم اى ان هناك اختلافات معنوية بين المتغيرين من الملحق (4.1) ومن الملاحق الاخرى يتضح ان هناك اختلاف بين المتغيرين , النتائج السابقة توضح ان الجرعة تزيد بزيادة المسافة فى حالة SAD وان جرعة السطح اعلى فى حالة SAD منه فى حالة SSD .

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