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Dedication

To face of God who helps me, and who gives good assistance and support.

To my beloved a blessed parents who give me good and believed duua, to my sister, brothers and every one who helps me.

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Abbreviations	Mains
NPC	Nasopharyngeal carcinoma
CT	Computer tomography
Gy	Gray
EBRT	External beam radiotherapy
RICK	Radioisotope Center of Khartoum
TNM	TNM System: T Tumor size , N lymphatic nodes involvement , M H hematologic spread.
IMRT	Intensive modality of radio therapy
MEV	Mega electron volt
SAD	Source Axis distance
SADs	Source Axis distances
CME	Cystoid macular edema
FA	Fluorescein angiography
OCT	Optical coherent tomography
TA	Triamcinolone acetonide
CGy	cent Gray
C1-C2-C3	Cervical vertebra (1-2-3)
CO-60	Cobalt 60
Ci	Curie
TPS	Treatment planning system
RAD	Radiation absorbed dose
3D-DRT	Three dimension conformal therapy
MR	Magnetic resonant
SPSS	Statistical package for Social Science Analysis under Windows
ABR	Auditory brain stem responses

Abstract

The Nasopharyngeal carcinoma is the most common cancer in Sudan; unfortunately it becomes more common in young People in Sudan (9 to 25years). The side effects of nasopharyngeal irradiation are cataract, spinal cord necroses , temporal lope deviation, ect..

Such undesirable side effect could be due to manual planning with out consideration of different anatomy between the patients. Because so there are very sensitive regions (critical organs), And depends on experience of doctor. The main objective of this study was Evaluate the dose received by critical organs in order to reduce the radiation sickness.

The researcher studied and assessed the radiation dose received with critical organs (eye, temporal lope, brain stem and spine) The study consist of 50 patients planned by (CT) and by using (TPS) that selected randomly .the collected data include the dose received by critical organs , ,tumor dose and the given Dose. The result showed that the dose received by critical organ was well correlated with given dose respectively And the dose received by spinal cord increased by 0.02 cGy for each 1cGy of the given dose ,Spine dose = 0.0172 * G.D + 48060 and dose received by temporal lope increased by 0 .5 cGy for each 1cGy of the given dose ,Temporal lobe dose = 0.4794 * G.D + 1287.7, Also for brain stem the dose increased by0 .4 cGy for each 1cGy of the given dose, Brain dose = 0.3287 * given dose + 2425, and same to eye 0.06 cGy for each 1cGy of given dose, Eye dose = 0.0554 * given dose – 190.67. All those equations explain the effect of given dose in the dose received by critical organs.

الملخص

سرطان البلعوم الانفى﴿ الخيشوم﴾ من اكثر السرطانات شيوعا فى السودان . لسوء الحظ اصبح اكثر شيوعا عند الشباب﴿٩–٢٥﴾.من الاثار الجانبية الناتجة عن الاشعاع تاكل النخاع الشوكى ,الضغط على الفص الجانبى وعتمة العين الخ.... هذة الجانبية غير المرغوب فيها نتيجة للتخطيط اليدوى دون مرعاة للاختلافات التشريحية بين المرضى . وذلك لوجود اعضاء حرجة فى منطقة العلاج والذى يعتمد على خبرة الطبيب .والهدف الاساسى من هذة الدراسة تقيم الجرعة الاشعاعية الماخوذة بواسطة الاعضاء الحرجة بغرض تقليل الخطر الاشعاعى .الباحث درس وقيم الجرعة الماخوذة بواسطة الاعضاء الحرجة مثل(النخاع الشوكى , الفص الجانبى , المخيخ الجزعى والعين) . الدراسة اشتملت 50على مريض تم تخطيطهم بواسطة المحاكى المقطعى تم اختيارهم عشوائيا. البيانات المجمعة احتوت على الجرعة الماخوذة بواسطة الاعضاء الحرجة ,جرعة الورم والجرعة المعطاة .النتيجة وضحت ان هنالك علاقة بين الجرعة الماخوذة بواسطة الاعضاءالحرجة والجرعة المعطاة ,والمعادلات بينت كلما زادت الجرعة المعطاة زادت جرعة الاعضاء الحرجة والمعادلات هى :

Spine dose = 0.0172 * G.D + 48060

Temporal lobe dose = 0.4794 * G.D + 1287.7

Brain dose = 0.3287 * given dose + 2425

Eye dose = 0.0554 * given dose – 190.67

.لكل عضؤ حرج على التوالى