

## Abstract

Nasopharyngeal carcinoma is a common disease in Sudan 3 % (2000-2007), and the treatment is external radiation therapy for radical treatment. The treatment is given via of two large lateral opposed field's covers the area above the pituitary fossa to include the base of the skull to the clavicle by a dose equal 5000 cGy in 25 fractions , 5 fractions per week. The radiation passes through the skin which might lead to radiation complication (erythema).

This study conducted at the Radiation and Isotopic Center of Khartoum (RICK) in the period from August 2007 to May 2008. The main objective of this study was to evaluate the dose received by the skin.

The radiation dose was measured during the treatment course by using (TLD-GR200) to measure the skin dose for patients treated under the Co-60 machine, as well as the Treatment Planning System (TPS).

The result showed that the mean dose that received by the skin at the center of the field that measured by TLD was  $2978.4 \pm 300.8$  and the skin dose that calculate by TPS was  $3047.3 \pm 197$ , the result also showed that the dose in the lower of the field was higher than that of the upper field region because of this region thinner than the other parts.

The tolerance of normal tissue (of the skin to conventional fractionated irradiation is approximately 3500 cGy) is of great practical importance to the

radiotherapist. Exceeding it many result in major morbidity and, some times, mortality (Erythema, Desquamation).

## الخلاصة

يعتبر سرطان الخيشوم (البلعوم الانفي) من السرطانات الشائعة الحدوث في السودان % 3 (2000-2007)، ويتم علاجه جذريا عن طريق الاشعاع من الخارج، العلاج المستخدم اولا عبارة عن حقلين اشعاعيين جانبيين يغطيان المنطقة من قاعدة الجمجمة الي الترقوة بجرعة اشعاعية قدرها 5000(سنت قراي) في 25 جلسة بمعدل 5 جلسات اشعاعية في الاسبوع .

يمر الحقل الاشعاعي عبر الجلد مما يسبب مضاعفات اشعاعية تضر به (احمرار الجلد) .

هذه الدراسة تمت بالمركز القومي للعلاج بالاشعة والطب النووي (RICK )

في الفترة من اغسطس 2007 الي مايو 2008 وكان الهدف الرئيسي من هذه الدراسة تقييم الجرعة التي يتلقاها الجلد . تم الحصول علي البيانات باستخدام مقياس الجرعة الحراري الوميضي TLD لقياس الجرعة الواصلة لمرضي تم علاجهم بجهاز الكوبلت- 60 وتم تحسيب هذه الجرعة بنظام العلاج التخطيطي TPS نتائج الدراسة اشارت الي ان الجرعة المتوسطة الواصلة الي الجلد في منتصف الحقل الاشعاعي باستخدام TLD هي  $2978 \pm 300.8$  , متوسط الجرعة المحسبة با  $3047.3 \pm 197$  TPS .وقد اوضحت النتائج زيادة الجرعة في الجزء الاسفل من الحقل الاشعاعي وذلك لان هذا الجزء اقل الاجزاء من ناحية السمك.

حد الاحتمالية للانسجة مهم في العلاج بالاشعة ,الزيادة عن هذه الجرعة ينتج علل وفي بعض الاحيان تكون مميتة .

حد الاحتمالية للجلد في حالة تقسيم الجرعة التقليدي تقريبا 3500 (سنت قراي).

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## List of Abbreviation

<b><i>Bccs</i></b>	Basal cell carcinoma
<b><i>CB</i></b>	Conduction Band
<b><i>ED50</i></b>	the dose required to produce dermal necrosis in 50% of the field treated
<b><i>F</i></b>	Fermi level
<b><i>IAEA</i></b>	International Atomic Energy Agency
<b><i>NBCCS</i></b>	Nevoil Basal Cell Carcinoma Syndrome
<b><i>RICK</i></b>	Radiation Isotope Center Of Khartoum
<b><i>RT</i></b>	Radiotherapy
<b><i>RTP</i></b>	Radiotherapy Planning
<b><i>SD</i></b>	Skin Dose
<b><i>SDD</i></b>	Source diaphragm distance
<b><i>STAT</i></b>	Skin Toxicity Assessment Tool
<b><i>TE</i></b>	Total Effect
<b><i>TLD</i></b>	Thermolumenence detector
<b><i>TPS</i></b>	Treatment Planning System

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# **DeDication**

**To**

**My FaMi l y**

**My Teachers**

**My Friends**

**M y Col l eges**

**My StudentS**

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