الآيـــة

قال تعالى:-

(وَقُل رَّبِّ أَدْخِلْنِي مُدْخَلَ صِدْقٍ وَأَخْرِجْنِي مُخْرَجَ صِدْقٍ وَاجْعَل لِّي مِن لَّدُنكَ سُلْطَانًا نَّصِيراً).

صدق الله العظيم

سورة الإسراء

الآية (80)

ABSTRACT

Nowadays it is noticed that increasing attention has been paid to radiation protection. There were few studies in evaluation of the radiation protection in radiology departments in Sudan and there were protection remarks in most of them.

This study is concerned with evaluate the radiation protection status in North Kordofan State (N.K.S) radiology departments and was conducted in four departments: (El-obied diagnostic Center, El-obied - National Fund for Health Insurance, Elnihoud hospital, Elnihoud Radiology clinic). The study has been carried out during the period from July 2011 up to January 2012. Radiation exposure surveys was carried out using survey meter and quality control test using its tools, The data was collected by data sheets to measuring patient dose using mathematical Equation. Finally collects other data using questionnaires.

The ESD was measured to 299 patients in four centers in NKS. The patients' entrance surface dose (ESD) was measured using exposure factors and machine using Unfors mult-O-meter. The patient data, dose and questionnaires were statistically analyzed and were computed and graphically represented. recommended by (ICRP) and high in one center (100 µSv/h). The mean ESD in this study was found to be (0.76±0.2) mGy, the mean of kVp was found (69.4±5.8)kV, the mean mAs was found (23.62±5.8)mAs, the mean age was found (44±16.3) years and the mean BMI was found (23.7±5.4) Kg/m2. The mean ESD for chest exams was (0.3±0.1)mGy, Skull (0.96±1.2) mGy, Abdomen (0.85±0.2) mGy, Spine (1.3±0.8) mGy & Limbs (0.43±0.2) mGy.

The protection status associated with co-patient was good in three centers and high on Elnihoud hospital (reception and door dose) 100µSv/h. The dose for technologist was acceptable in three centers. The lowest radiation dose was found in El-obied - National Fund for Health insurance mean (0.49±0.19) mGy, and the highest in Elnihoud hospital mean (1.06±0.3) mGy, in El-obied diagnostic Center mean (0.696±0.2) mGy & Elnihoud Radiology clinic mean (0.882±0.4) mGy. There was numerous cases dose on the four centers was higher than the DRL on El-obied - National Fund for Health Insurance (2%), El-obied diagnostic Center (4%), In Elnihoud Radiology clinic (23%) & Elnihoud hospital (49%).

الملخص

تزايد في الآونة الاخيرة الإهتمام بالوقاية من الإشعاع متمثل في العديد من البحوث التي اجريت في هذا المجال نسبة للآثار الكبيرة والمخاطر التي ينطوي عليها استخدام الإشعاع. قليل من تلك الدراسات أجري في عدد من مراكز الأشعه بالسودان وقد اظهرت بعضاً منها بعض جوانب الخلل في الوقاية من الإشعاع .

هدف هذا البحث تقييم الوقاية من الإشعاع بأربعة أقسام للأشعه بولاية شمال كردفان بكل من (المركز التشخيصى بالابيض, الصندوق القومى للتأمين الصحي بالابيض, مستشفى النهود و عياده الأشعه بالنهود) بولاية شمال كردفان, فى الفتره من يوليو 2011 إلى يناير 2012م.

تم قياس الأشعة المتسربة في تلك المراكز بواسطة الماسح الإشعاعي كما تم عمل قياسات ضبط الجودة بالنسبة لأجهزة الأشعه الموجودة.

قيست الجرعة السطحية لعدد 299 مريض عن طريق المعادلة الرياضيه باستخدام عوامل التعريض وجهاز قياس (ينوفورس ملتى او متر) وذلك لفحوصات (الصدر- الرأس – البطن - الفقرات والاطراف). وكذلك تم ملء استبيانات للتقيين في تلك المراكز لمعرفة كفية ممارسة وقاية المرضى من الإشعاع.

اما عن مستوى الوقاية المتوفرة بالنسبة المرافقين فكانت جيدة ما عدا إستقبال مستشفى النهود الذى به بعض التسرب 100مايكروسيفرت في الساعة وبالنسبة للعاملين كانت الجرعات أقل من الجرعة السنوية المسموح بها عدا في مركز مستشفى النهود حيث كان معدل الجرعة السنوية أعلى بقليل من المعدل المسموح به عالميا 100 مايكروسيفرت فى الساعة.

كان متوسط الجرعة السطحية لكل الفحوصات(0.76±0.2) ملى قرى بينما كان متوسط عوامل التعريض (69.4±5.8) كيلوفولت و (23.62±5.8) ملي أمبير ثانيه كان متوسط الأعمار(44±16.3) سنة بينما كان متوسط مؤشر كتلة الجسم(23.7±5.4) كيلو جرام/متر^2.

بالنسبة لفحوصات الصدر كان متوسط الجرعة السطحية (0.3±0.1) ملى قرى بينما كان لفحوصات الرأس (0.96±1.2) ملى قرى وبالنسبة للبطن (0.85±0.2) ملى قرى للفقرات(1.3±0.8) ملى قرى وللأطراف (0.43±0.2) (ملي قرى). كانت أعلي متوسط الجرعات الإشعاعية في مسشفى النهود (1.06±0.3) ملي قرى بينما كان اقلها في مركز الصندوق القومى للتأمين الصحى بالابيض ((0.49± 0.19. بالنسبة للمركز التشخيصى بالابيض كانت (0.696±0.2) وفى عيادة الأشعه بالنهود (0.882± 0.4) ملى قرى.

بينما كانت هنالك العديد من الجرعات أعلى من المستوى المسموح به عالمياُ حسب المستوى المحدد بواسطة المنظمة العالمية للوقاية من الإشعاع في كل من مركز الصندوق القومى للتأمين الصحى (3%) المركز التشخيصى بالابيض 4% عيادة الأشعه بالنهود 23% ومستشفى النهود 49%.

Dedication

To all my dears……

To My parents……

My brother……

My teachers……

To each student

And

MY FRIENDS

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List of Abbreviations

Q.C	Quality control
R.S.O	Radiation Safety Officer

C.T	Computed Tomography
ESD	Entrance Surface Dose
FSD	Focus -to- Skin Dose
BSF	Backscatter factor
FFD	Focal Film Distance
SPSS	statistical package for social science
TLD	.Thermo luminescence dosimetry
Gy	Gray
kV	Kilo voltage
mAs	Mili impairs second
mSv	Mili Servet
DRL	Diagnostic reference level
ICRP	International Commission for Radiological Protection
LET	linear energy transfer
KERMA	Kinetic Energy Released per unit Mass