

Dedication

To
My parents, son (Mohammed),
Brother and sisters.
My teachers, colleagues
And students.
&
For all those who search for
The knowledge.

love ...

With my

Acknowledgement

Acknowledgement

Grateful acknowledgement is made to my teacher, supervisor, Ustaz. Husain Ahmed Hassan, who farsighted and generous help has assisted greatly in the development of this project.

I want to thank my teacher Dr. Bushra Husain Ahmed for his help and advice.

The assistance and considerable help and support from my friend, Dr. Nadia Omer Elatta, are also gratefully acknowledged.

My thanks are also to my friend, Miss. Lubna Ahmed Hassan for her great assistance and help.

Grateful acknowledgement is made to the staffs of the Departments under study and College of Radiologic Sciences and Nuclear Medicine at Ribat University.

Dr. M. El Amin Alshingity and Colonel. Alnoor Bashir are also gratefully acknowledged.

Mr. Salah A. M. Altahir who helped me in printing this research is gratefully acknowledged and every body who made this research possible.

 The researcher

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Abstract

This survey study is performed to determine the variations in routine brain CT protocols in all centers in Sudan, because the choice of scanning protocol in CT will affect the dose delivered to the patients and quality of the image. The types and characteristics of CT scanners have major role in type of protocol and will influence radiation dose to the patients.

This research follows both descriptive and analytical methods. Special questionnaire for the technologists was designed to collect information about protocols of brain CT. This questionnaire contains the following technical issues: - radiographic baseline, slice thickness / slice spaces, exposure factors and doses of contrast media used in each department.

Data was collected from patients referred to the CT scan departments in duration of two weeks (from Saturday 16/4 to

Saturday 30/4/2005). They were **(800)** patients from different states, ages, male and female having different pathologies. **(560)** patients were undergoing brain CT scans with **70 %** from the total number.

The researcher found that:-

- 1- The protocols of brain CT scan shows wide variations in many technical aspects. For example:- radiographic baseline, slice thickness / slice spaces, exposure factors used by the operators and different doses of contrast media used in the departments.
- 2- 22 % of the departments under study used for adults, S.O.M. baseline and thus avoided scanning the lenses of eyes, and for children, only 33 % of the departments using this baseline.
- 3- In all centers under study, the routine protocols do not include scans after injection of contrast media, unless there is an indication.
- 4- In using slice thickness / slice spaces for example, using of 10/10 mm slice thickness / slice spaces for adults was 22 % from the departments and 45 % for the children using this slice thickness / slice spaces.
- 5- All centers using low doses of contrast media which will affect the degree of lesion enhancement, may lead to mis-diagnosis.

أجريت هذه الدراسة المسحية لتحديد الاختلافات في تقنيات تصوير المخ بالأشعة المقطعية في جميع مراكز السودان، لأن إختيار هذه التقنيات يؤثر على جرعة الأشعة التي يتعرض لها المريض وعلى جودة الصورة. و إختيار هذه التقنيات يعتمد كذلك على أنواع أجهزة الأشعة المقطعية ومواصفاتها. اتبعت في هذه الدراسة الطريقة التحليلية الوصفية. وللحصول على معلومات توضح الطرق التقنية لتصوير المخ بالأشعة المقطعية؛ تم عمل استبيان لتقنيي الأشعة المقطعية؛ وذلك للإجابة على المسائل التقنية الآتية:- الخط الرئيسي للتصوير الإشعاعي للمخ، سمك الشرائح والفراغات بينها، عوامل التعريض و جرعات وسيط التباين المستخدمة في الأقسام. جمعت معلومات عن كل المرضى الذين قاموا بعمل فحص أشعة مقطعية خلال فترة أسبوعين (من السبت 16/4/2005م حتى يوم السبت 30/4/2005م) وعددهم 800 مريض في جميع مراكز الأشعة المقطعية بالخرطوم. و كان المرضى من جميع ولايات السودان و من كل الأعمار، ذكور و إناث ذوي أمراض مختلفة. عدد 560 مريض منهم تم لهم عمل فحص للمخ، أي نسبة 70 % من العدد الكلي للمرضى.

-:وقد خلصت الدراسة إلى النتائج الآتية

طرق تصوير المخ بالأشعة المقطعية في السودان أوضحت 1-
اختلافا كبيرا في إختيار الخط الرئيسي للتصوير الإشعاعي للمخ،
سمك الشرائح والفراغات بينها و عوامل التعريض و جرعات

وسيط التباين المستخدمة بواسطة العاملين. 2- 22 % من الأقسام تحت الدراسة تستخدم للبالغين الخط الرئيسي للتصوير الإشعاعي أعلى الخط الواصل بين المحجر وفتحة الأذن الخارجية وذلك لتفادي تعرض عدستي العيون، بينما للأطفال فقط 33 % من الأقسام تستخدم هذا الخط.

كل المراكز تحت الدراسة تقدم عدم عمل مسح للمرة 3- الثانية للمريض باستخدام وسائط التباين المختلفة ما لم يطلب ذلك أو استدعت حالة المريض ضرورة ذلك.

اختيار سمك المقاطع 10 ملم ثم فراغ 10 ملم كانت نسبته 4- من الأقسام للبالغين 22 % بينما بلغت نسبته للأطفال 45 % من الأقسام.

5- كل الأقسام تستخدم جرعات قليلة من وسيط التباين مما يؤثر على درجة توضيح التغيرات المرضية و الذي قد يؤدي إلى خطأ في التشخيص.

List of abbreviations

The abbreviations	The meanings
CT	Computerized Tomography
HRCT	High resolution CT
kVp	Kilovoltage peak
mAs	Milliamperage/second
C.R.T	Cathode Ray Tube
GE	General Electric
M.F.C	Multiformat Camera
I.A.M.	Internal auditory meatus
E.A.M.	External auditory meatus
C.S.F.	Cerebrospinal Fluid
O.M. Baseline	Orbitomeatal Baseline
S.O.M. Baseline	Superior Orbitomeatal Baseline
I.O.M. Baseline	Inferior Orbitomeatal Baseline
I.V.	Intravenous
I.M.	Intramuscular
mm	millimeter
ml	milliliter
C.V.A.	Cerebrovascular Accident
S.O.L.	Space occupying lesion
I.V.U.	Intravenous Urography
P.N.S.	Paranasal sinuses

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