

الاية

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ان تنفد كلمات ربي ولو جئنا بمثله مددا)

هدى الله العظيم

DEDICATION

TO MY PARENTS

TO MY BROTHERS

TO MY TEACHERS

TO MY COLLEAGUES

TO MY FRIENDS

Acknowledgment

Through his holy direction and his holy will I have accomplished this work.

We are grateful for the help receive from our supervisor Dr. Husain Ahmed Hassan and Mr. Mogahid M.A Zidan to whom always remain indebted. I want to thanks my friends who gives us his precious time and for his help and support during this research.

Abstract

Artifacts can seriously degrade the quality of computed tomographic (CT) images, sometimes to the point of making them diagnostically unusable. To optimize image quality, it is necessary to understand why artifacts occur and how they can be prevented or suppressed. In this study we evaluate the image quality in three hospitals: al-zytoun specialist hospital, Al-Ribat teaching hospital and the Modern Medical Center and we found, CT artifacts originate from a range of sources. Physics-based artifacts result from the physical processes involved in the acquisition of CT data. Patient-based artifacts are caused by such factors as patient movement or the presence of metallic materials in or on the patient. Scanner-based artifacts result from imperfections in scanner function. Design features incorporated into modern CT scanners minimize some types of artifacts, and some can be partially corrected by the scanner software. However, in many instances, careful patient positioning and optimum selection of scanning parameters are the most important factors in avoiding CT artifacts.

الخلاصة

التشويش يقلل من جودة الصورة في التصوير المقطعي وفي بعض الأحيان يجعلها غير قابلة للتشخيص وللمحافظة علي جودة الصور من المهم فهم لماذا يحدث التشويش وكيفية الوقاية منه و منعه.

في هذه الدراسة قمنا بتقييم جودة الصورة في ثلاث مستشفيات مستشفى الزيتونة التخصصي , مستشفى الرباط الجامعي و المركز الطبي الحديث ولقد وجدنا.

بأن التشويش ينتج من عدة مصادر , خلل فيزيائي نتيجة للمعالجة الفيزيائية وتتضمن معالجة البيانات و خلل مبني علي المريض وهذا يحدث نتيجة لعوامل مثل حركة المريض او وجود مواد معدنية علي المريض و خلل ناتج من المساحة وهذا نتيجة لخلل وظيفي.

تصميم عوامل مساعدة في اجهزة التصوير المقطعي الحديثة يمكن ان يقلل من التشويش وبعضها يمكن ان يصححها جزئيا عن طريق برامج مصممة لذلك وفي بعض الأحيان وضع المريض علي الجهاز بعناية و اختيار عوامل تصوير مناسبة يعتبر عنصر مهم لتفادي حدوث الأخطاء.

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List of Abbreviations

CT = Computed Tomography

CNR = Contrast to Noise Ratio

CdWO₄ = Cadmium Tungstate

Gd₂O₂S = Gadolinium Oxysulphide

MTF = Modulation Transfer Function

NaI = Sodium Iodide

QA = Quality Assurance

QC = Quality Control

SPR = Scan Projection Radiograph

YGdO = Yttrium Gadolinium Oxide