

Dedication

To my family

To my friends

To the children in my country

and the

.world's children

Acknowledgements

*In the name of Allah the merciful and prayer and peace be upon our master
.Muhammad and his family*

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Abbreviations

.VUR: Vesicoureteric Reflux
 .ESD: Entrance Surface Dose
 .MCUG: Maturing Cystourethrography
 .TLDs: Thermoluminescent Dosimeters
 .MRI: Magnetic Resonance Imaging
 :Urinary Tract Infection. UTI
 .BMI: Body Mass Indicxe
 .LDRL: local diagnostic reference level
 .CT: Computed Tmography
 .NRPB: National Radiological Protection Board
 .DAP: dose-area product
 .GCPFL: grid-controlled variable-rate pulsed fluoroscopy
 .VCUG: voiding cystourethrography
 .LNT: linear no-threshold theory
 .IR (ME) R: Ionising Radiation (Medical Exposure) Regulations
 .ABC: Automatic Brightness Control
 .MOSFET: metal-oxide semiconductor field-effect transistor
 .RPO: right posterior oblique
 CFL: continuous fluoroscopy.
 .AP: anteroposterior
 .Fc: Calibration factor
 .Gy: Gray
 .Rad: radiation absorbed dose
 .Kerma: Kinetic Energy Released per unit Mass
 .Sv: Sievert
 .E: effective dose
 .FOV: Field of view

الخلاصة :

إن الأطفال لديهم خطر الإصابة بالسرطان بسبب الإشعاع أكثر من البالغين (مرتين إلى ثلاث مرات)، ولذا فقد أجريت هذه الدراسة بغرض زيادة الاهتمام نحو الآثار الحيوية للجرعة الإشعاعية للمريض.

فحص الإشعاعي للمساك البولية أثناء التبول للأطفال :

هو إجراء يشيع استخدامه في أقسام أشعة الأطفال وتستخدم عادة للكشف عن ارتداد البول ويظهر تشوهات المثانة والإحليل. هذه الدراسة تهدف إلى تحديد الجرعة السطحية، وجرعة الأعضاء التناسلية والجرعة الفعالة والمخاطر المرتبطة والمحدثة بالتصوير الإشعاعي للأطفال المرضى الذين يخضعون لهذا الفحص. أجريت الدراسة في مستشفى سوبا الجامعي، الخرطوم. الجرعة الممتصة تم تحديدها بولسطة مقاييس الجرعات الحراري لعدد 33 طفلاً.

علاوة على ذلك ، تم تقييم الجرعة السطحية لمراقبين المرضى، والتي يساعد في دعم وراحة الطفل أثناء الفحص. متوسط الوقت للكشف الفلوري وعدد الصور الإشعاعية أثناء الفحص كانت 2.8 دقيقة و 5 صور ، على التوالي. وكان متوسط قيمة الجرعة السطحية 5.51 ملي قري. الجرعة الفعالة في الدراسة للمرضى كانت 0.22 ملي سيفرت.

جرعة الإشعاع للمرضى بشكل جيد ضمن حدود السلامة المعمول بها ، وذلك في ضوء الممارسة الحالية. علاوة على ذلك ، ينبغي أن يرتدي مرافق المريض مريلة الرصص الواقية الملتفة حول الجسم .

Abstract

Paediatrics and children have been recognized that they have a higher risk of developing cancer from the irradiation than adults (two to three times). Therefore, increased attention has been directed towards the dose to the patient. Micturating cystourethrography (MCUG) is a commonly used fluoroscopic procedure in children and commonly used to detect the vesicoureteric reflux (VUR) and show urethral and bladder abnormalities. This study aims to determine the ESD, gonadal dose, effective dose and relevant radiogenic risks associated with pediatric patients undergoing MCUG. The study was carried out in Soba University hospital, Khartoum. The entrance surface dose (ESD) was determined by thermoluminescent dosimeters (TLDs) for 33 children. Furthermore, the surface dose was evaluated for the co-patient, who helps in support and comfort of the children during examination. The mean fluoroscopy time and number of radiographs during MCUG were 2.8 min and 5 images, respectively. The average ESD value was 5.51 mGy. The effective dose for patients was 0.22 mSv.

The radiation dose to the patients is well within established safety limits, in the light of the current practice. Furthermore, the co-patient should put on a lead wrap-around protective apron, since he/she is not facing the scattered radiation. We believe that the available formulae to evaluate effective dose to patients and co-patients.