Dedication

This work is dedicated:

To the soul of my father

To my mother

To any one who ever taught me

Acknowledgments

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Abbreviations

C : Sampling distribution

cm : Centimeter

CT : Computerized Tomography

df : Degree of freedom

DMSA : Dimercaptosuccenic acid

DTPA : Diethylenetriamine pentacetic acid

Ei : Expected number of cases in ith category under Ho

ERPF : Effective Renal Plasma Flow

ESR : Erthrocyte Sedementation Rate

g :gram

GFR : Glomerulous Filteration Rate

HIV : Human Immunodefficiency Virus

H0 : null hypothesis

In : Inch

IVU : Intravenous Urography

keV : Kilo electron volt

L/min : Liter / mint

MAG-3: Mercaptoacetyltriglycine

MBq : Mega Bequerel
MDP : Methylene Dithosphonate

MRI: Magnetic Resonance Imaging

NaI (T1): Sodium Iodide (Thallium)

Oi: observed number of cases categorized in ith category

pH : puissance d'hydrogene

RBCs : Red Blood Cells

RIA: Radio Immune Assay

RICK: Radiation & Istope Center of Khartoum

SPECT: Single Photon Emission Computerized Tomography

SPSS: Statistical Professional for Social Science

TB: Tuberculosis

Tc99m: Technetium 99m

U/S: Ultrasonography

USA : United State of America

UTI : urinary tract infection

V/Q : ventilation perfusion ratio

VUR : vesicoureteric reflux

WHO : World Health Organization

χ**2 :** chi – square test

Abstract

Pediatric nuclear medicine, in order to survive, must be innovative in finding ways of competing with other pediatric imaging studies for better health care. In this study a group of thirty-one patients with urinary tract infection confirmed by clinical investigation, (fever, pain…etc), laboratory investigation (RBC & pus cell) and urine culture, were evaluated by nuclear medicine study.

The aim of the study was to compare the diagnostic value of cortical scintigraphy using Tc99m dimercaptosuccinic acid (Tc^{99m}-DMSA), with two other routine investigations; the intravenous urographin (IVU), and ultrasonoghraphy (US), for diagnosis of renal parenchymal abnormality in children. The Tc^{99m}-DMSA renal scan was utilized as the gold standard test for renal involvement. All patients had Tc^{99m}-DMSA renal scan, and US, and only 22patients had contrast IVU.

The Tc^{99m}-DMSA renal scan showed abnormality renal scanning in about 94% of patients, US abnormalities were detected in about 81% of patient, while the IVU detected defects in about 87%.

Because the prevalence of upper UTI in children is high, Tc^{99m}-DMSA renal scan is undoubtedly the available

tool for pediatricians as a guide in giving appropriate antibiotic therapy and to prevent further renal damage.

The study concludes that, the renal cortical scintigraphy with Tc^{99m}-DMSA has been reported to be a useful children diagnostic study of acute parenchymal renal infections, Moreover, is presently the method of choice to detect acute parenchymal infection.

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