

Dedication

This work is dedicated:

To the soul of my father

To my mother

***To any one who ever
taught me***

Acknowledgments

I would like to thank the staff of the nuclear medicine in the department of Radiation & Isotope Center of Khartoum (RICK).

I would like to express my sincere thanks to Dr. Siddik Mohammad Mustafa for his continuous guidance, supervision and patience during the preparation of this thesis.

I extend my deepest gratitude to Dr. Eltigani Mohammad Ahmed for help, guidance, valuable advice and endurance

My great acknowledgement to Mr. Mohamed Alfadel (College of Medical Radiologic Sciences)

I would like to express my thanks to Mr. Salah Ali Fadlalla (College of Medical Radiologic Sciences), and Miss. Iman Abdel Hamid

Finally, thanks for all those who helped me in the preparation and improvement of this thesis.

Abbreviations

- C** : Sampling distribution
- cm** : Centimeter
- CT** : Computerized Tomography
- df** : Degree of freedom
- DMSA** : Dimercaptosuccenic acid
- DTPA** : Diethylenetriamine pentacetic acid
- E_i** : Expected number of cases in *i*th category under H_0
- ERPF** : Effective Renal Plasma Flow
- ESR** : Erthrocyte Sedementation Rate
- g** :gram
- GFR** : Glomerulous Filtration 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)
O_i: observed number of cases categorized in ith category
pH : puissance d'hydrogene
RBCs : Red Blood Cells
RIA: Radio Immune Assay
RICK: Radiation & Istopes 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
χ² : 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 Tc^{99m} dimercaptosuccinic acid (Tc^{99m}-DMSA), with two other routine investigations; the intravenous urographin (IVU), and ultrasonography (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 22 patients 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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