

# SPECTRUM OF IMAGING FINDINGS OF BRAIN IN NEUROLOGICAL DISORDERS IN PATIENTS ON MAINTENANCE HEMODIALYSIS

Mahmoud Lotfy El Sheikh, Mohamed Mahmoud Elshafei, Noha Mohamed Elkholy,\* Gamaleldin Mohamed Abdelhalim Ashoush

Department of Radiodiagnosis, Department of Internal Medicine,\* Faculty of Medicine, Alexandria University.

## Introduction

End-stage renal disease (ESRD) is described as a permanent deterioration in an individual's own renal function which, in the absence of dialysis or transplantation, gets severe enough to be lethal. Numerous ongoing medical conditions can lead to end-stage renal failure. Hypertension and diabetes are the main causes. When the patient has a GFR of under 60 mL/min for three months or more, or whenever there have been signs of damaged kidneys for no less than three months, chronic kidney disease is diagnosed. End-stage renal disease is marked by a raised incidence of pain, which can have both causes, including renal and non-renal. Neurological complications CKD patients on hemodialysis such as Cerebral hemorrhage & cerebrovascular disease is common. The emergence of problems in the neurological system among hemodialysis patients is multifaceted, In nearly every case, identifying the underlying diseases requires more than just a neurological exam. The main important tool often required to evaluate neurological adverse effects in people who are symptomatic often imaging, which includes a CT scan and an MRI of the brain

## Aim of the Work

The aim of the work was to enlist the common and uncommon imaging findings in Brain in renal failure patients on hemodialysis.

## Patients and Methods

### PATIENTS:

The study was conducted on 20 ESRD patients on maintenance Hemodialysis for more than 6 months referred to the radio-diagnosis department of Alexandria Main University Hospital with a respected recent cerebral insult.

### METHODS:

- I-** Thorough history taking.
- II-** Thorough clinical examination.
- III-** Imaging.

- Multi Detector Computed Tomography (MDCT) of the brain Scan (was performed using 64 slices/ rotation; CT machine (Brilliance 64; Philips))
- Conventional MRI: (1.5 Tesla Magnet (Philips))  
T1WI, T2WI, Axial FLAIR, Axial DWI & ADC map, Axial SWI, post contrast sequence if indicated
- IV-**Data post processing using CT & MRI workstations.
- V-**Statistical analysis.

## Results

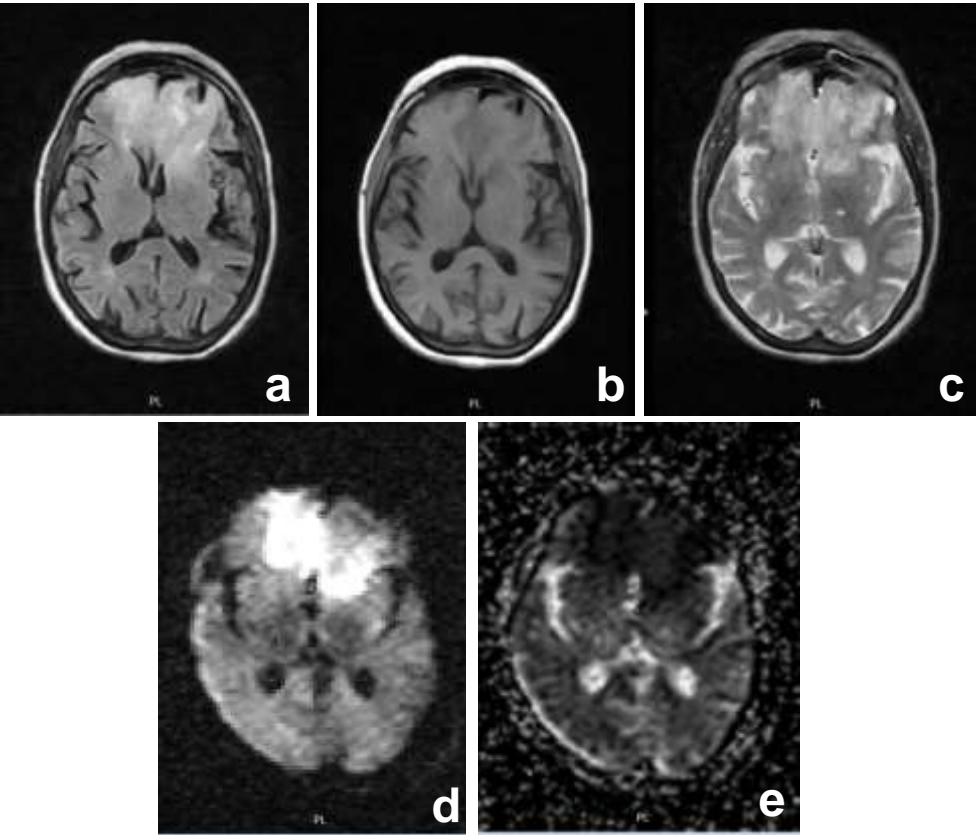
**Table 1:** Distribution of the studied cases according to CT findings

CT findings	Negative		Positive	
	No.	%	No.	%
Brain atrophic changes	12	60.0	8	40.0
White matter changes	16	80.0	4	20.0
Cerebral calcification	19	95.0	1	5.0
Intracranial infection	19	95.0	1	5.0
Non-traumatic intracranial hemorrhage	18	90.0	2	10.0
Chronic Cerebral infarction	16	80.0	4	20.0
Recent Cerebral infarction	19	95.0	1	5.0
Cerebral venous sinus thrombosis	18	90.0	2	10.0
Uremic encephalopathy	19	95.0	1	5.0

**Table 2:** Distribution of the studied cases according to MRI findings

MRI findings	Negative		Positive	
	No.	%	No.	%
Brain atrophic changes	6	35.0	14	70.0
White matter changes	8	40.0	12	60.0
Cerebral calcification	19	95.0	1	5.0
Microbleeds	14	70.0	6	30.0
Intracranial infection	19	95.0	1	5.0
Non-traumatic intracranial hemorrhage	18	90.0	2	10.0
Chronic Cerebral infarction	16	80.0	4	20.0
Recent Cerebral infarction	19	95.0	1	5.0
Cerebral venous sinus thrombosis	18	90.0	2	10.0
Uremic encephalopathy	19	95.0	1	5.0

**ILLUSTRITIVE CASE:** A 60-years old female, on maintenance Hemodialysis for 2.5 years with medical history of Hypertension.



Axial FLAIR (a) Axial T1WI (b) Axial T2WI (c) showing mild swelling across both frontal lobes of both cerebral hemispheres displaying bright signals in T2 & FLAIR, low signals in T1 sequence Axial DWI/ADC (d,e) showing diffusion restriction  
•**Provisional diagnosis:** Bilateral meningoencephalomyelitis

## Conclusion

When assessing the neurological complaints for ESRD patients, imaging is of vital relevance, therefore it is an essential tool in follow-up of these patients when suspecting any neurological insult evolving.