

# A review of the first 100 cases presenting in a newly installed Computerized Tomography Unit in Osogbo, Nigeria

\*T. O. Bello\*, A. A. Aremu, I. A. Ajayi

## SUMMARY

**Introduction:** Computerized tomography imaging is a versatile imaging technique capable of giving clinical information not available on plain radiographs. This modality is not readily available to most Nigerians.

**Objective:** To assess the demographic characteristics, the clinical indications and CT diagnosis in the first 100 patients in our facility installed four months ago.

**Results:** CT brain comprised 74% of the indication for imaging, with brain trauma alone accounting for 36.49%. CT Myelography and CT abdomen comprised 14% and 6% respectively. We also noted that 13% of the patients were referred from centres more than 100km from our facility

**Conclusion:** CT is important in the diagnosis of structural brain disorders, especially in the management of trauma. The country also requires more CT units to prevent delay in the management of patients.

*Niger Med J. Vol. 48, No. 1, Jan. – Mar., 2007: 1 – 3.*

**KEYWORDS:** Computerized Tomography, CT Brain, Trauma, Osogbo, Nigeria.

## INTRODUCTION

Computerised axial tomography (CT) was first presented to the scientific community in April 1972, it took about 4 minutes to produce two slices of the human brain, and it was necessary to place a water bag around the head to allow for better image acquisition<sup>1</sup>. Nowadays modern spiral unit can acquire images of the whole head in less than one minute. CT has advanced to become one of the most revolutionary diagnostic tools available to physicians. Despite numerous advances in computed tomography imaging, the basic principle of image acquisition has not changed; it is based on an advanced x-ray technique that uses a thin beam of x-ray combined with detectors to create axial slices or cross-sectional radiograph of the body.

This has made possible the image of various tissues and organs which cannot be resolved by conventional radiography; major organs such as the liver, kidneys, adrenal glands, pancreas, can be separately identified, as can the grey and white matter in brain.

In Nigeria, because of the cost of installation of a CT unit this imaging technique is available in few centres. We describe

.....  
**From:** Department of Radiology, Lautech College of Health Sciences, PMB 4400, Osogbo. bellotope@hotmail.com

**Correspondence:** Dr. A. E. Edo, Department of Radiology LAUTECH, Osogbo.

the case presentation and the demographic characteristics of the first 100 patients seen in our facility that was installed four months ago.

## MATERIALS AND METHODS

One hundred patients were involved in this study, they were all patients referred to the unit for CT studies. All the patients had CT scan using a Somatom Espirit, single slice spiral CT scanner, manufactured by Siemens Germany. The procedures were done by the consultant radiologists with the assistance of the residents within the department. The procedures were well tolerated by the patients, no adverse reaction occurred. The age, sex, clinical indications, CT diagnosis and distance of referral centre were retrieved from the patients' records in our department and the case notes. The clinical diagnoses were then cross-tabulated with the CT diagnosis to determine the degree of concurrence; in suspected cases of neoplastic lesions we retrieved the histological result to confirm the diagnosis.

## RESULTS

One hundred patients were involved in this study comprising 69(69%) males and 31(31%) females. The age ranges from 1 year to 89 years, with a mean age of 45.32 years. Table 1 demonstrates the type of CT examinations done for these patients, and Table 2 shows the correlation of clinical indications for CT with the CT diagnosis.

Seventy four patients (74%), of the total was CT Brain, of which the majorities were cases of brain trauma comprising 27 cases. In these patients, 12(44.4%) had cerebral hematoma, out of which 5 ultimately benefited from surgery. Fifteen (15) cases out of the seventy four patients for CT brain were diagnosed to be cerebrovascular accident; CT confirmed the clinical diagnosis in 11 cases (73.3%). Brain tumour was suspected in 12 cases. Five patients (5%) were due to congenital brain diseases, comprising of 3 cases of Dandy walker syndrome, and 2 cases of aqueduct stenosis.

Six abdominal scans were done in this period (Table 3), most of the indication was for obstructive jaundice, in 4 cases CT made an accurate diagnosis of carcinoma of the head of pancreas, the last case was in a 5 year old child with a huge hepatoblastoma which was confirmed with histology.

We had fourteen cases of CT myelography (14%); the main

**Table 1: Types of CT examinations in the first four months**

Brain	74
Myelography	14
Abdominal	6
Chest CT	3
Musculoskeletal	3

## CASES PRESENTING IN A NEWLY INSTALLED COMPUTERIZED TOMOGRAPHY UNIT

indication was severe low back pain, the common findings were vertebral fractures, disc prolapse and metastasis (Table 4). Three patients had CT thorax; CT demonstrated diffuse lung disease in these patients. Pleural effusion was noted in 2 of the patients. We also observed that 80% of our patients were referred from other hospitals, and 13% were from a distance of over 100km from our centre.

### DISCUSSION

**Table 2: Clinical indications for CT brain cross tabulated with the diagnosis of brain CT**

Clinical indication	CT Diagnosis	N
Trauma n=27(36.49)	Normal study	4
	Cerebral contusion	4
	skull fracture	6
	Hematoma	12
	CVD	1
CVD n=15 (20.27%)	Normal study	3
	CVD	11
	Brain Atrophy	1
Brain Tumour N=15 (20.27%)	Normal study	5
	Glioma	8
	Brain Atrophy	1
	CVD	1
Headache N=5(6.76%)	Normal study	2
	Gliomas	2
	CVD	1
Epilepsy N=4 (5.41%)	Normal study	3
	Brain Atrophy	1
Hydrocephalus N=5 (6.76%)	Dandy walker	3
	Aqueduct stenosis	2
Microcephalus n=1(1.35%)	Brain Atrophy	1
Dementia N=3 (4.05%)	CVD	1
	Brain Atrophy	1
	Glioma	1
<b>TOTAL</b>		<b>74</b>

**Table 3: Clinical indications correlated with CT and Histology Diagnosis**

Clinical Indication	CT+ Histology Diagnosis	n	%
Obstructive Jaundice	Pancreatic tumours	4	66.7
Abdominal Mass	Hepatoblatoma	1	16.7
Retroperitoneal Mass	Non-Hodgkins lymphoma	1	16.7
	<b>TOTAL</b>	<b>6</b>	

**Table 4: Findings on CT Myelogram**

	N(%)
Vertebral fracture	3(21.4%)
Cervical spondylosis	1(7.1%)
Lumbar spondylosis	1(7.1%)
Disc Prolapse	3(21.4%)
Vertebral Metastasis	3(21.4%)
Normal study	1(7.1%)
TB Spine	2(14.3%)

CT has become an essential tool in clinical practice, especially in the management of patients with brain pathology as illustrated in this study, 74% of the patients were cases involving the brain, majority of which were trauma<sup>1</sup>. Despite advances in MRI, CT remains the investigative modality of choice in the management of head injury. CT ability to obtain clear images of the patients' tissue without invasive technique is obviously valuable, especially in patients who have undergone major trauma such as in Road traffic accident<sup>2</sup>. A CT scan of the brain should be obtained when appropriate; this will delineate the extent of brain injury and assist in planning for surgery if necessary. In this series 12 patients presented with hematoma out of the 24 cases of brain trauma.

Stroke was confirmed in 11 patients out of the clinically suspected 15cases, CT is now the imaging modality of choice in the management of stroke patients, 65 % of patients with stroke presented with Ischemic stroke, in keeping with results of earlier authors.<sup>2-4</sup>

The development of modern CT machine with shorter scanning time i.e. spiral CT (contrast and spatial resolution) in addition to the narrow slice width, has made it the investigation of choice in assessing the extent of tumours and in the staging of the majority of solid tumours.<sup>5,6</sup> Accuracy of the technique makes it possible to predict whether or not some tumours can be removed successfully. Intracranial tumours may be either Intracerebral or extracerebral and this distinction can always be made with certainty on the basis of CT alone. In this study, CT confirmed the clinical diagnosis of brain tumour in 8 patients. Abdominal CT is the gold standard for making the diagnosis of pancreatic diseases<sup>7</sup>, in this study, the 5 patients who had CT abdomen for obstructed jaundice and abdominal mass had pancreas tumours, a patient with suspected retroperitoneal mass on CT was shown by histology to be a huge hepatoblastoma. Fourteen patients had CT myelography for various conditions; trauma, disc prolapse and evaluation of metastasis to the spine were the most common indications; CT provided accurate diagnosis in all cases. Although Magnetic Resonance imaging is superior to CT for evaluating spinal cord lesions, CT is the gold standard for evaluating trauma to the spine.<sup>8,9</sup> A major concern noted in this study is the distance that patients have to travel to obtain a CT scan in the South west of Nigeria, in our study 13% of the patients had to travel a distance of more than 100km to have access to a CT facility. Most of these patients presented with traumatic head injury and should have had a CT scan done much earlier. The authors believe that hospital administrators and the government should provide funds to make more CT units available in the country.

In conclusion, CT is a non-invasive radiographic imaging that allows for easy and rapid diagnosis of most medical and surgical conditions and this imaging modality should be made affordable and available to Nigerians.

#### REFERENCES

1. Bergstrom K., Scotti G., The brain,1995; 167 – 170 ( In The NICER textbook of Radiology, Patteerson H, (ed) 1995, Nicer institute, Norway.)
2. Parizel P. M., Van Goethem J. W., Ozsarlak O., Maes M., Phillips C. D. New developments in the neuroradiological diagnosis of cranio-cerebral trauma. *Eur Radiol.* 2005 Mar; **15(3)**: 569–81.
3. Ogunseinde A. O., Atalabi O. M. Cranial computerized tomography in the evaluation of stroke patients in Ibadan; *Nigerian Journal of Clinical Practice* 2003; **2**: 81– 3.
4. Nyame P.K., Bonsu-Bruce N., Amoah A. G. B., Trends in the incidence of cerebrovascular accidents in Africa. *West African Journal of Medicine* 1999; **19**: 19–22.
5. Beuchamp N. J., Baker P. B., Wang P. Y. Imaging of acute cerebral Ischaemia. *Radiology* 1999; **212**: 307–324.
6. Alexander Flowers: Brain tumours in the older adult, *Cancer Control*; 2000; 523–538.
7. Hirai T., Korogi Y., Ono K., Yamashita Y. Evaluation of Vascular Supply with Angio-Computed Tomography During Intra-Arterial Chemotherapy for Brain Tumors. *Cardiovasc Intervent Radiol.* 2005; 234–236.
8. Wyat S. H., Fishman E. K.: Spiral evaluation of the pancreas In Fishman E.K, Jeffery R.B(eds) Spiral CT,principles, techniques and applications;1995,57–59, New York; Raven.
9. Micheal T. M., Thomas M., Boumphrey F. et al; Lumbar herniated disk disease and canal stenosis: prospective evaluation by surface coil MRI,CT, and Myelography *AJR*,1986; 757–765
10. Morimoto K., Ikeda T., Maeda Y., Kanou M., Kishiguchi T., Mogami H. Lumbosacral lipoma: computed tomographic scan findings and surgical correction. *Shinkei Geka.* 1986; **14(3 Suppl)**: 391–396.