

ONE YEAR STUDY OF CT SCAN IN PATIENTS WITH VISUAL FIELD LOSS

Agbeja A.M. and Dutton G.N.

Department of Ophthalmology, University College Hospital, Ibadan, Nigeria.

SUMMARY

19 patients from the Neuro-Ophthalmology clinic of the Western Infirmary, were found during a one year period, to have various types of visual field loss and on the basis of this were sent for CT Scanning. 12 out of the 19 patients had positive CT Scans, the other 7 had no demonstrable pathology on CT Scan.

Key Words — Visual Field — CT Scan Head—

RESUME

Sur une période d'un an, on a trouvé 19 patients de la Clinique de Neuro-Ophthalmologie de l'Infirmerie Ouest ayant différents types de perte de champs visuels qui ont conduit à faire un examen tomодensitométrique qui fut positif chez 12 des 19 patients, les 7 autres n'avaient pas des pathologie visible à l'examen tomодensitométrique.

INTRODUCTION

The procedure of CT Scanning has become one of the most important and easily accessible investigations in Neuro-ophthalmology, in view of its accuracy of results and non invasiveness (1,2,3). Most patients coming into the Neuro-ophthalmology clinic would one time or the other undergo CT Scanning.

One of the reasons for this study was to assess the cost-effectiveness of the procedure of CT Scanning in Neuro-ophthalmology patients, the other reason was to correlate the visual field loss with CT Scan findings. It was therefore decided to do a pilot study on patients with visual field loss to see if the investigation of CT Scanning was absolutely necessary to further help in diagnosis and management of the patients.

PATIENTS AND METHODS

In a one year period, 1986-1987, all new patients referred to the Neuro-ophthalmology clinic at the Western Infirmary, Glasgow, who had definite demonstrable visual field loss, assessed and categorised by two Ophthalmologists were sent for CT Scanning, some with contrast injections as deemed necessary by the Neuro-radiologist. The CT Scan not only included standard cuts of the brain but also cuts of the orbit. Most patients had previous skull X-rays.

This was a prospective study with no fore-knowledge of the clinical lesion, and so the CT Scans had to be assessed by 2 independent Neuro-radiologists.

RESULTS

19 patients were assessed for the series. The age range was 19-76 years. Twelve of them were females (Table 1).

TABLE I

AGE	TYPE OF FIELD DEFECT	CT SCAN REPORT
54	Homonymous Hemianopia	Pituitary Adenoma
65	Inferior Defect Left Eye	Suprasellar Mass
57	Generalised Constriction Right Eye	Smpty Sellar
73	Let Homonymous Hemianopia	Occipital infarct (R)
76	Left Homonymous Hemianopia	Occipital infarct (R)
76	Left Homonymous Hemianopia	Cerebral atrophy with ventricular dilatation.
70	Right Homonymous Hemianopia	Bilateral occipital infarcts
69	Left Homonymous Hemianopia	Occipital infarct (R)
71	Left temporal and supronasal	Anterior Communicating artery anaurysm
64	Generalised constriction	Temporal lobe infarct
73	Inattention Homonymous Hemionopia	Diffuse cerebral atrophy
42	Bitemporal hemionopia	Grossly enlarged ethmoidal sinuses
34	Generalised constriction	Normal
19	Bitemporal Hemianopia	Normal
25	Paracentral scotoma	Normal
70	Generalised constriction	Normal
40	Enlarged blind	Normal
61	Generalised constriction	Normal
69	Enlarged blind spot	Normal

Of our series, one out of the 3 patients with pituitary lesions had a homonymous hemianopia, one had an inferior unilateral quadrantanopia and one had a unilateral generalised constriction of field. None of the patients with pituitary lesions had bitemporal hemianopia. (Table II).

TABLE II

TYPE OF FIELD LOSS	NUMBER OF PATIENTS	CT SCAN REPORT	
		+VE	-VE
Homonymous Hemianopia	7	7	-
Bitemporal Hemianopia	2	1	1
Generalised Constriction	5	2	3
Field loss crossing horizontal Midline	2	2	-
Paracentral scotoma	1	-	1
Enlarged blind spot? (due to swollen disc)			
+ Shunt vessel	1	-	1
- Shunt vessel	1	-	1
		12	7

One of the 7 with normal CT Scans and a bitemporal hemianopia, the other 6 had varying field losses, namely, generalised constriction, later found to be hysterical, enlarged blind spot, and paracentral scotoma. So far, no definite diagnosis has been made in these 7 patients.

All 5 patients with occipital lesions had a homonymous hemianopia. Inattention hemianopia was found in a patient who was later demonstrated to have diffuse cerebral atrophy, the other patients with diffuse cerebral atrophy had a true homonymous hemianopia and also demonstrated cerebromalacia. 3 of the patients with head injury had generalised constriction and one had a bitemporal hemianopia. Only 5 out of the 19 patients were aware of their visual field loss, the others were found by visual field testing.

Discussion

Twelve out of the 19 patients we sent for CT Scanning were found to have demonstrable pathology (63%). Three had pituitary lesions, 5 had occipital lesions, 4 had other lesions and 7 were normal. (Fig I, II, III). What about the patients



Fig I CT Scan of the patient with Pituitary adenoma



Fig II CT Scan of the Patient with bilateral occipital infarcts.

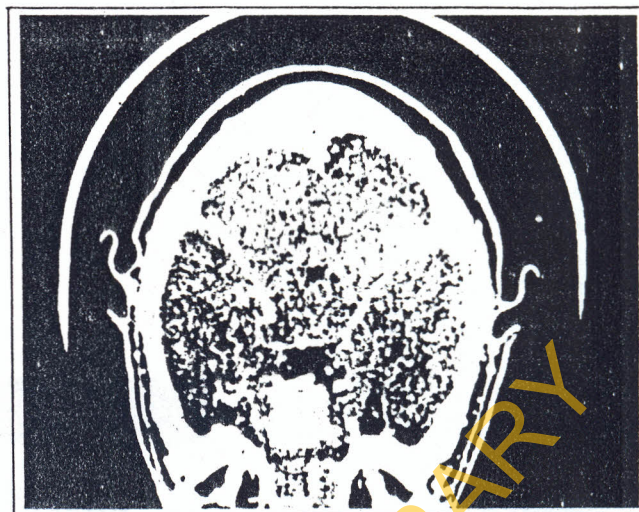


Fig III CT Scan of the patient with a suprasellar mass.

with X-ray findings but normal CT Scans? 4 out of the 7 with normal CT Scans had a positive skull X-ray finding. In most of these the Neuro-radiologists had been sure the CT Scans were normal, having had the X-ray information before the scan, but in one of them, after careful review by a third Neuroradiologist, the suggestion of an empty sella syndrome came up i.e. one with possible radiological misdiagnosis.

All the 7 patients with homonymous hemianopia had a positive CT Scan, therefore, we would advocate that all patients with homonymous hemianopia have a CT Scan, since not all of them from our series had an occipital infarct. One of them had a pituitary adenoma which was treated with Bromocriptine and responded very well with a total disappearance of the homonymous hemianopia and recovery of visual acuity from 6/36 to 6/6 in the worse eye and 6/6 to 6/5 in the better eye.

Only 2 of the patients required craniotomy, the suprasellar mass and the anterior communicating artery aneurysm pressing on the left optic nerve.

Bitemporal hemianopia was previously thought to be pathognomonic of pituitary lesions but the 2 patients in our series who had this type of field loss had no pituitary lesion, one had grossly enlarged ethmoidal sinuses and the other had a normal CT Scan even with contrast injection.

Conclusion

From the study, not all the homonymous hemianopia was due to occipital infarction, one out of the 7 had a pituitary adenoma. In this patient, the skull X-ray showed a marked expansion of the pituitary fossa but only the CT Scan could confirm the presence of a soft tissue space occupying lesion which enhanced with contrast.

Some patients had normal CT Scans although the skull X-rays suggested lesions. In these patients, it was necessary to proceed to CT Scanning with contrast to confirm the presence or absence of a lesion which could further help in

determining the course of management to be outlined for the patients.

The CT Scan has therefore been found to be a useful tool in patients with demonstrable visual field loss especially in those with homonymous hemianopia, most of whom in our series had occipital infarcts.

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