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CT brain findings and common co-morbid disease in patients presenting with first time seizures

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Abstract

INTRODUCTION: A significant number of patients attend to the Emergency Department due to the occurrence of a seizure event[3–5]. Seizure events can constitute up to 1% of all emergency department (ED) visits, with a quarter of these first time seizures[6]. Neuroimaging is key in the evaluation of patients with first time seizures[10], and due to wider availability and quick acquisition time, computed tomography (CT) is routinely utilised. The expense associated with radiological imaging is significant[9] and places a burden on constrained healthcare rescources[12]. Moreover, there is high mortality associated with acute symptomatic seizures from CNS infections, stroke and traumatic brain injury[2,7,13] , necessitating determination of the prevalence of these diseases.

AIM: The aim of the study was determining the CT scan findings of patients presenting with first time seizures.

METHOD: The study was a retrospective analysis of CT brain scans done in patients with first time seizures at Helen Joseph Hospital in Johannesburg, from January 2015 – December 2015. Associated co-morbid disease was also documented and analysed.

RESULTS: About 313 CT brain scans were included in the study, with the average patient age being 44 years and 56% of the scans having abnormal findings. CNS infections (15% or 47 cases) were the most prevalent cause of radiological abnormality, followed by cerebrovascular accidents (CVA) (11% or 33 cases) and lastly Traumatic Brain Injury (TBI) (4% or 14 cases). The most prevalent co-morbid disease was retroviral disease (RVD), (27% of patients), hypertensive disease (16%) and acute head injury (10.5%). We also found a strong association between patient age and abnormal CT scan findings, with the average age of patients with abnormal scans being 49 years and those with normal scans 38 years (p-value: 0.001). Furthermore, we found that the older patients were likely to present with CVA or neoplastic brain disease, and that overall , the patients with CVA were on average 52 years old (p-value 0.001).

CONCLUSIONS: We established that CNS infections were the most common finding in first time seizure patients and that underlying HIV infection was the most common associated co-morbid disease, thus firmly establishing the leading role of infectious disease in seizure presentation. CVA's were the third most common radiological finding and co-morbid hypertension the second most common disease, reflecting the effect of non-communicable disease in the South African population. Lastly, despite the endemic prevalence of trauma in South Africa, traumatic brain injury did not feature as highly in the causes of first-time seizure presentation (6th overall). The 8% prevalence we found is within the 4-9% prevalence in most international studies[3,6,29]