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Primary Psychiatric Behavioral Disorders Indicative of Neuropathological Processes: A Review of 125 Cases

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Abstract: Some manifestations attributed to a primarily psychiatric disorder may result from an identified or unidentified neurological lesion; in other words, psychiatric symptoms are often a common determinant for both neurological pathologies and psychopathological disorders. The objective of this work was to study the radio-clinical profile of psychiatric manifestations attributable to a neurological process. We therefore carried out a retrospective cross-sectional study with a descriptive aim. The survey took place from December 2018 to March 2019 at the Abidjan Addictology and Mental Hygiene Service (SAHM) of the National Institute of Public Health (INSP). The period studied was 08 years (2012-2019). Thus, 47169 patient files were identified over this period (2012 to 2019). A total of 125 patient files meeting the inclusion criteria were selected from an exhaustive sampling. It should be noted that the use of specific biomarkers was not possible in our context. There was a modest female predominance of 52.80%, a mean age of 65 years. Clinical characteristics revealed a history of hypertension (23.2%). Call signs were amnesia (80.5%), incoherent speech (45.5%) and the delirium-hallucination dyad (40.9%). A dementia syndrome was evoked in a proportion of (61.6%); it required neuroimaging. In 96.8% of the cases, the brain scan revealed cortico-subcortical atrophy lesions (66.4%), but MRI could only be performed in (3.2%). Degenerative, vascular or mixed etiologies were evoked in 34.4%, 15.2% and 30.4% respectively. The risk of excessive psychiatry and misdiagnosis of behavioral disorders reveals the interest of a more elaborate neuropsychiatric evaluation and the use of neuroimaging.

Keywords: Behavioral Disorder, Psychiatry, Neuroimaging, Dementias

1. Introduction

In its 2001 report on mental health, the WHO indicated that the point prevalence of all neuropsychiatric conditions was approximately 10% in adults [1]. Within these disorders, psychiatric symptoms are often a common determinant for both neurological and psychiatric etiologies. Like "symptomatic decoys", these primarily psychiatric manifestations are at the origin of abusive referrals to mental health services and are in fact responsible for frequent diagnostic misunderstandings. Defradat P. was right to maintain that "a sign taken in isolation has no meaning; it is only by associating it with other signs and paraclinical examinations that we reach a diagnosis" [2].

In practice, however, there are patients with no clear neurological signs, but in whom brain imaging has made it

possible to make a decision. The neurological lesions found were often demonstrably responsible for the onset of these psychiatric symptoms. There is therefore necessarily a common clinical profile or an aggregation of symptoms that makes it possible to group these patients into a neuropsychiatric cluster. What is the clinical profile of patients presenting with behavioral disorders indicative of neurological lesions? What are the lesions commonly found on neuroimaging? The present study, by attempting to answer these questions, shows the interest of neuroimaging in the diagnostic investigations in psychiatry. It aims to participate in improving the diagnostic support of behavioral disorders with a neurological mask for a better management.

2. Materials and Methods

This was a retrospective cross-sectional study with a descriptive aim. The objective of this work was to study the radio-clinical profile of psychiatric manifestations attributable to a neurological process. The survey related to the study was conducted from December 2018 to March 2019 or 04 months, with a study period from January 2012 to January 2019, or 08 years. A total of 47169 patient records were identified over this period; 314 were selected based on inclusion criteria. The patients who met the following criteria were included: being a patient followed in the said service between 2012-2019 for behavioral disorder; having performed a brain imaging demonstrating neuroradiological lesions attributable to the symptomatology. It should be noted that the use of specific biomarkers was not possible in our context. Finally, 125 patient files were retained from an exhaustive sampling. In addition, a bias of representativeness was to be noted. Indeed, the inclusion criteria, in addition to guaranteeing methodological rigor, contributed to an underestimation of the frequency of the phenomenon studied.

3. Results

3.1. Sociodemographic Characteristics (Table 1)

Patients over 65 years of age, in 55.20% of cases, with a mean age of 65±15 years. Women represented 52.8% of this population, i.e. a sex ratio (M/F) of 0.89.

Table 1. *Distribution by socio-demographic characteristics.*

Sociodemographic variables		
Age	**(n=125)**	**(%)**
[17- 26 years old]	04	3,2
[26- 36 years old]	03	2,4
[36- 46 years old]	05	4,0
[46- 56 years old]	14	11,2
[56- 66 years old]	30	24,0
≥ 66 years old	69	55,2
Gender		
Male	59	47,2
Female	66	52,8

3.2. Clinical Characteristics

Arterial hypertension represented 23.2% of the history followed by psychiatric disorders (08%) had a personal history (Table 2). The cluster of neurocognitive signs accounted for 61.6% of the presenting signs, with amnesia leading the group of predominant signs (80.5%) followed by the cluster of psychotic signs (35.2%) (Table 3).

Table 2. *Distribution of patients by medical history.*

Medical background		
Nature of Background	**frequency (f)**	**(%)**
High blood pressure (Arterial hypertension)	29	23,2
Psychiatric	10	08
Cerebrovascular accident	6	4,8
Meningitis	2	1,6
Epilepsy	1	0,8
Brain abscess	2	1,6
Cranial trauma	3	2,4
HIV	2	1,6

Table 3. *Distribution of Patients by Call Signs.*

Signs found on examination	**n**	**(%)**
Neurocognitive and general signs	*77*	*61,6*
Amnesia	62	80,5
Headache	1	1,3
Confusion	5	6,5
Convulsive seizure	9	11,7
Psychotic signs	*44*	*35,2*
Incoherent speech	20	45,5
Hallucinations	11	25,0
Soliloquy	6	13,6
Delirium	7	15,9
Thymic signs	*15*	*12,0*
Sadness	6	40,0
Hyperactivity	8	53,3
Aggressiveness	1	6,7
Instinctual signs (Insomnia)	*14*	*11,2*

Table 4. *Distribution of patients by type of examination and neuroradiological lesions.*

Neuroradiological investigations		
Radiological examinations requested	***Workforce (n=125)***	***(%)***
Computed Tomography (CT)	121	96,8
Magnetic Resonance Imaging (MRI)	04	3,2
Different lesions identified on imaging	*Frequency*	*(%)*
Cortico-subcortical atrophy lesion	*83*	*66,4*
With leukoaraiosis	25	30,1
Vascular lesion	22	26,5
Without other associated lesions	36	43,4
Vascular lesions	*44*	*35,2*
High blood pressure (Arterial hypertension)	22	50,0
Ischemic lacunae	22	50,0
Aneurysms	1	2,3
Tumor lesions	*14*	*11,2*
Meningioma	11	78,6
Adenoma	2	14,3
Cyst	1	7,1
Infectious lesions	*3*	*2,4*
Abscess	1	33,3
Encephalitis	2	66,7
Hydrocephalus	*3*	*2,4*

3.3. X-ray Diagnostic Characteristics

Before imaging, the diagnosis of predementia syndrome was made in 61.6% of patients (Figure 1). A cerebral computed tomography (CT) scan was requested in 96.8% of patients (Table 4). Cortico-subcortical atrophy accounted for 66.4% of lesions, followed by vascular lesions 35.2% (Table 4). After imaging, the diagnostic hypotheses of dementia with degenerative, vascular or mixed etiologies were evoked respectively in proportions of 34.4%, 15.2% and 30.4% (Figure 2).

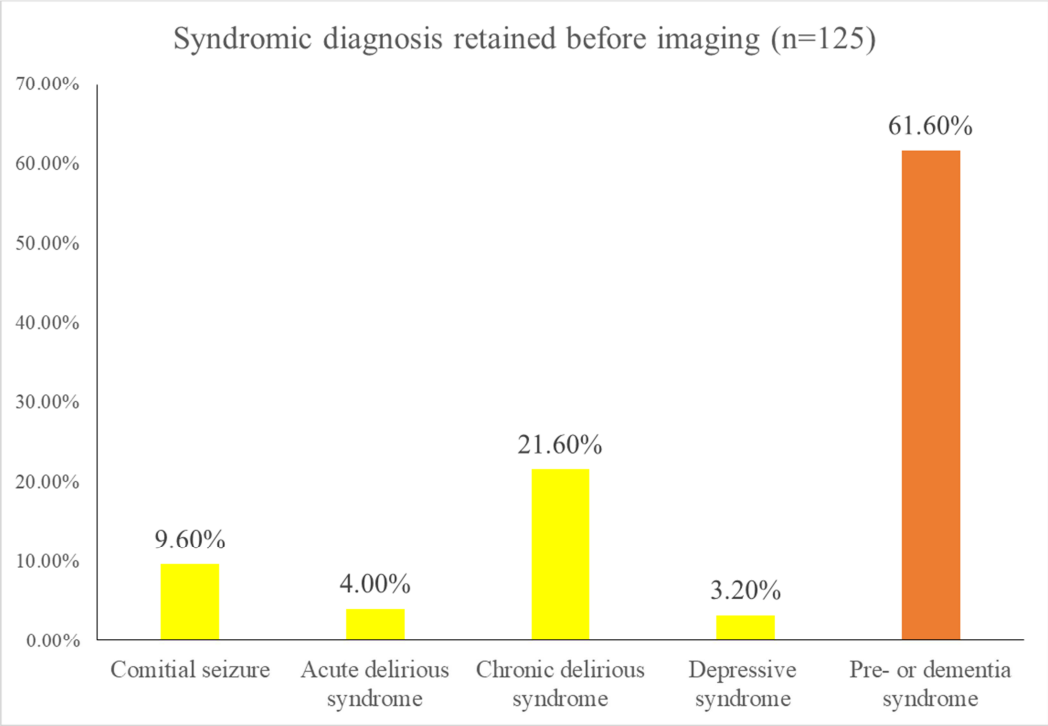

Figure 1. *Distribution of patients by syndromic diagnoses before imaging.*

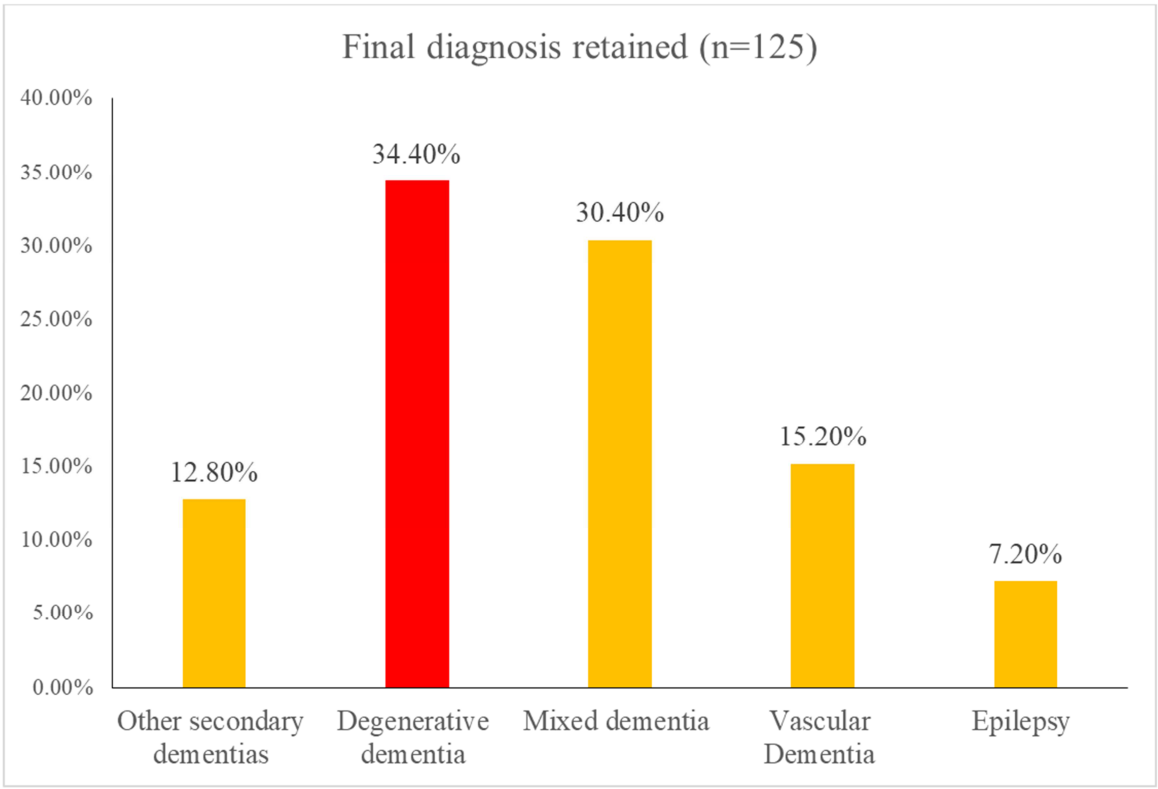

Figure 2. *Distribution of patients by post-imaging etiological diagnoses.*

4. Discussion

More than half of the respondents, 55.20%, were aged 66 years and over. The average age was 65±15 years. It should be noted that the phenomenon studied increased from the age of 46 in this study. This increase would indicate that middle-aged adults are more at risk in our context. There was a slight female predominance with 52.8%, i.e. a sex ratio (M/F) of 0.89. This female predominance is noted by several studies [3, 4]. In its report on the impact of mental and behavioral disorders in 2001, the WHO states that mental disorders are on average more prevalent in women than in men [1], and in correlation with the high age of the respondents, the significant proportion of women can be explained by their longer life expectancy [5].

High blood pressure (Arterial Hypertension) was the most common medical history in a proportion of 23.2%. In Côte d'Ivoire, for comparison, Attoh T. found a prevalence of hypertension of 20.4% in the 40-59 age group [6]. Age is indeed accompanied by an increase in arterial stiffness due to a fibrotic and atheromatous process [7]. Indeed, hypertension is a major risk factor for all subtypes of stroke [8].

Although behavioral problems were the reason for psychiatric consultations or referrals, neurocognitive signs were found at a frequency of 61.6%. Amnesia was in first place (80.5%) among these signs. The same figures were found by Chittati M.: 86% [9]. When they are at the forefront of the clinical picture, memory disorders represent either an acute amnesic episode leading to the discussion of amnesic ictus or psychogenic amnesia, or a chronic amnesic syndrome, most often linked to a degenerative cerebral disorder, and particularly to Alzheimer's disease. In this cluster, amnesia was followed by seizures (11.7%). Arbitrarily, convulsive seizures are referred to psychiatry probably for psychic seizures occurring in epileptics. Indeed, in a study by Kanner et al., post-seizure psychiatric symptoms were found in 100 patients with drug-resistant focal epilepsy, within 72 hours after the seizure [10].

The cluster of psychotic signs represented 35.2% of the signs. Incoherent speech and hallucinations were found in frequencies of 45.5% and 25% respectively in this cluster. Hallucinations can occur in a variety of pathologies, both organic and neurodegenerative [11]. The hallucinatory etiologies also vary according to age. In young adults, psychiatric causes, in particular schizophrenia, are more often found. In the elderly, non-psychiatric causes such as neurodegenerative pathologies, sensory deficits or confusional episodes are the most frequent. Several studies have shown that the presence of these symptoms is strongly associated with cognitive disorders and possibly with the development of a neurodegenerative pathology [12, 13]. Moreover, the pre-dementia syndrome was diagnosed in 61.60% of our respondents. Recent neuropathological and biochemical data indicate that neuronal lesions in the pre-dementia stages involve the medial temporal structures (hippocampal formation, parahippocampal gyrus, entorhinal cortex) which are known to play a role in long-term memory. It is therefore possible to suspect the presence of the disease clinically at a very early stage, well before dementia or major neurocognitive disorder, thanks to specific neuropsychological tools. Confirmation of the diagnosis will be possible thanks to neuroimaging and the use of specific biomarkers [14]. The spectrum of cognitive disorders is thus interrupted in the middle, between age-related cognitive disorders at one end and dementing cognitive disorders at the other, whatever the etiology: vascular, degenerative. In order to fill this gap, Flicker et al [15] and then the Mayo Clinic team [16] proposed to use the term mild cognitive impairment (MCI) to describe the cognitive state separating age-related cognitive disorders from those related to dementia. The interest of the concept of MCI is therefore to draw attention to the existence of pre-dementia cognitive disorders and thus to mobilize reflection on the nature of the diseases responsible [17].

Cognitive impairment, even mild, is easily related to cerebrovascular pathology by imaging [14]. Thus, brain scans were requested in 96.8% of patients. Although MRI is the most indicated because of its higher sensitivity than CT, the lack of financial means for patients in our context often leads the practitioner to request a CT scan as first line. The contribution of structural imaging in the detection of organic pathologies initially manifested by psychiatric symptoms is demonstrated by a retrospective study by Wahlund et al. He considered the frequency of detection of organic lesions after the request of an MRI by the psychiatrist in adult patients admitted to a psychiatric hospital. Although there were no signs of neurological localization, the clinician had sufficient suspicion to request this examination [18]. Among 731 patients, organicity existed in 121 patients (17%). These results partially confirmed the proposals for the indication of CT scanning in psychiatry that had already been made by Weinberger (1984) [19].

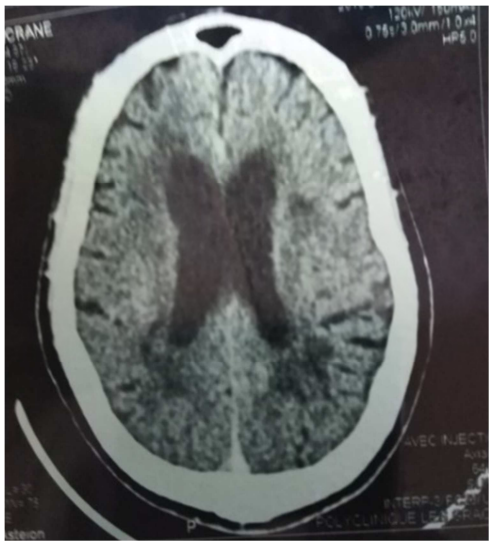

Figure 3. *CT image of cortico-subcortical atrophy in a respondent.*

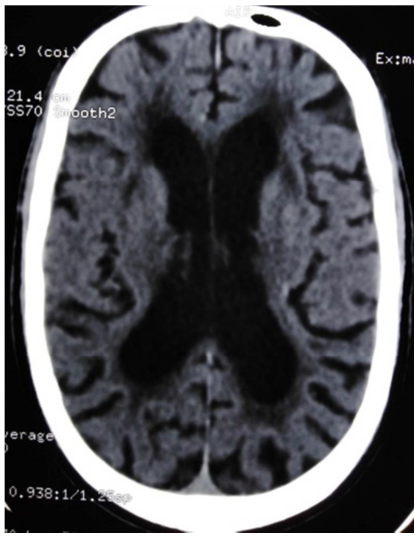

Figure 4. *CT image of cortico-subcortical atrophy with leukoaraiosis in a respondent.*

Based on the relevance of these neuroimaging investigations, cortico-subcortical atrophy was found in 66.4% of the respondents (see figure 3). Our results are superior to those of Chattati [9] who found (41.8%). Degenerative dementia was found in 34.40% of patients and vascular dementia in 15.2%. Our figures differ from those of Stevens T et al. who found higher proportions, respectively 50% and 21.9%. This could be explained by the fact that his study population consisted solely of subjects with dementia [20]. Degenerative dementias are generally related to aging [9, 21-23], whereas vascular dementias were increasingly common in hypertensive adults. Besides the risk of stroke, high blood pressure also increases the risk of cognitive decline and dementia [8]. Leukoaraiosis (see figure 4) was incriminated in 30.1% of dementias with cortico-subcortical atrophy. Arterial hypertension, which causes arteriosclerosis of the vessels irrigating the white matter, impairs the self-regulation of blood flow. A defect of dilatation of the small arteries with a reduction of the perfusion pressure generates the relative hypoperfusion. Leukoaraiosis could therefore be due to ischemia of insufficient intensity to create an infarct or a lacuna, but sufficient to cause damage to the parenchyma. The two factors for which the association is strongest are age and hypertension. However, High blood pressureis not necessary for the development of leukoaraiosis [24].

5. Conclusion

These results remind practitioners that a variety of manifestations commonly attributed to a primarily psychiatric disorder may result from various causes such as a lesion or a neurological dysfunction, whether identified or not. This raises the need for a good clinical evaluation of any behavioral disorder at the risk of excessive psychiatricization of any "symptomatic lure" from a semiologically rich psychiatric field.

The expansion of neuroscience and the growing understanding of the neuroanatomical-physiological substrates of psychiatric illnesses are giving an increasingly important diagnostic role to neuroimaging techniques. The diagnostic confirmation obtained after the paraclinical examinations, shows here the interest of neuroimaging in psychiatry and brings closer two inseparable disciplines: psychiatry and neurology.

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