

# Paraphrenia and persecutory delusions: brief reflection about neuropsychology evaluation in the elderly without dementia

## Abstract

Delusions are negative experiences and it can be vivid and clear, with all the power and impact of real or true perceptions. It may occur in any sensory modality, while auditory hallucinations are more common in schizophrenia and related disorders. The aim of this study was to describe the behavioral and cognitive profile of five cases of persecutory hallucination in elderly with no cognitive impairment. Case series study that analyze the characteristics, functional and cognitive abilities, of 5 patients older than 60 years, 4 to 9 years of schooling, with paranoid disorder. For the description of the personality, functionality and paranoid characteristics it were used structured interview of the Cambridge Examination for Mental Disorders of the Elderly (CAMDEX) and the cognitive functions were applied by the Cambridge Cognitive Examination (CAMCOG). The assessment of the results was made through a qualitative and quantitative analysis of the instruments. Outcomes pointed to a preservation of functional and cognitive abilities, whereas delusions were persecutory and well elaborated. Neuroimaging was normal. Due to the cognitive preservation, lack of insight, several adjustments of the medication, for the duration and intensity of the delusions, the final diagnosis was paraphrenia. It can be concluded that it is necessary to continue following the five patients and to perform a new neuropsychological evaluation after one year of conduct.

**Keywords:** neuropsychology, psychotic disorders, aged, diagnosis

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## Introduction

Naming psychiatric disorders began long ago with Hippocrates in 460-377 (b.c.). Pinel and Esquirol in the eighteenth century also proposed new concepts to classify psychiatric illnesses based on observations and data systematization. Nineteenth century, Kraepelin modified the classification, based also on observation and organization of symptoms. This is where the term early dementia came from. Later Bleuler changed the term Early Dementia to Schizophrenia because the prognosis would not necessarily be negative.<sup>1-3</sup> Paranoid disorders, delusions and hallucinations are terms described from the beginning of psychiatry to explain and classify the behavior of patients in clinics and hospitals. Renowned names like Martin Roth, Emil Kraepelin, Kahlbaum and Felix Post among others presented to psychogeriatrics the concept of psychosis and alterations of thought that occur in elderly; the term paraphrenia was born.<sup>4,5</sup> The term "Paraphrenia" is not used in the current DSM-5 edition.<sup>6</sup>

Looking for a better criterion that emphasizes the description of the disease, in 1972 a group of St Louis scientists published the "Feigners' Criteria". In 1978, Spitzer published the "Research Diagnostic Criteria" (RDC) for the purpose of describing mental disorders, based on the "Feighner's Criteria". Even the scientific purpose of RDC, it was used for the development of DSM-III in 1980. The DSM-III is considered to be the most revolutionary edition because it presents a multi-axial evaluation, presents more detailed concepts and tries to abolish etiological theories. Axis I refers to clinical disorders, Axis II describes mental retardation and personality disorder, Axis III describes any physical disorder or general medical condition, Axis IV refers to psychosocial and environmental problems

that may be associated with the disorder and Axis V refers to a global assessment of social, occupational and psychological functioning scale. ICD-10 presents the clinical aspects of each disorder guidelines for the diagnosis, duration and severity of symptoms and aims at better adaptation to clinical practice. DSM-IV was published in 1984 and maintained the same characteristics as the DSM-III-R, but a larger effort was made on DSM-IV approaches to ICD-10.<sup>7,8</sup>

Hallucinations are experiences analogous to the perception without external stimulus. It can be vivid and clear, with all the power and impact of real or true perceptions. It may occur in any sensory modality, while auditory hallucinations are more common in schizophrenia and related disorders.<sup>6</sup> Hallucinations are underdiagnosed and poorly value by health professionals, although these symptoms may significantly worsen patient's quality of life.<sup>4</sup> Few studies have been conducted to elucidate the psychopathogenic process and few physicians are able to manage these symptoms.<sup>9</sup>

The great diagnostic differential between paraphrenia and schizophrenia is in the course of the disease. In other words, it can be describe that paraphrenia presents characteristics of striking persecutory delusions, but rarely with auditory hallucinations and rare alterations of thoughts.<sup>4</sup> Kraepelin divided the paraphrenia into: systematic, expansive, confabulatory and fantastic. According to Caixeta et al.<sup>4</sup> the diagnostic criteria for paraphrenia are:

- i. Concern with one or more systematized delusions;
- ii. Relatively affection and personality well-preserved;
- iii. Intellectual decline, visual hallucinations, incoherence, disorganized behavior are not present;

- iv. Understandability of behavior change (related to delusions);
- v. Absence of organic brain disorder.

In literature, considering aging paraphrenia is a poorly discussed subject, even though it is included in DSM-5 with another terminology (“Delusional Disorder”)<sup>5</sup> and appears in case studies such as “paraphrenia” and “late-onset paraphrenia”.<sup>7,10,11</sup> It was verified in the literature that the case is considered paraphrenia when there is presence of a strong component of illusion well detailed, with relative preservation on the personality and cognitive functions, affects with more incidence with women, around 60 years old.<sup>10</sup> It differs from dementia syndromes because it does not show an evident decline in cognitive and daily life functions<sup>11</sup> and it differs from the classic schizophrenia syndrome because symptoms do not appear in early adulthood, as described in DSM-5.<sup>6,11</sup>

Paraphrenia is a pathology located on the frontier among neuropsychology, psychiatry and neurology, it may not be recognized and causes great suffering for the patient. As the incidence of hallucinations in aging increases, geriatrics appears as the fourth professional that receives these patients. It is important to establish the correct diagnosis by discarding the existence of the concomitant psychiatric pathology to avoid inadequate treatments that add more distress to the patient and their family.

## Objective

To describe the behavioral and cognitive profile of five cases of persecutory delusions in elderly patients without cognitive impairment.

## Methods

### Design

Case series study that analyze the characteristics, functional and cognitive abilities, of 5 patients older than 60 years, 4 to 9 years of schooling, with paranoid disorder.

### Participants

Inclusion criteria was elderly patients, more than 65 years old, both sex, without cognitive impairment (MMSE>25 points and CAMCOG>79 points) suffering paranoid delusions. As an exclusion criteria, patients who did not accept to participate in the cognitive evaluation.

It was evaluated five elderly patients, 1 male and 4 female. All participants had 4 to 9 years of schooling, with mean age 76.8 years (minimum=71; maximum=84; standard deviation [sd]=5.26). The mean in the MMSE was 26.2 points (minimum=25; maximum=27; sd=1.09), in CAMCOG mean of 84.4 points (minimum=80; maximum=92; sd=5.68), and the Clock Drawing Test<sup>12</sup> was equal to 18.8 points (minimum=18; maximum=20; sd=1.09).

### Neuropsychological evaluation

In the first moment, all patients were submitted to a clinical evaluation with a geriatrician and collected data such as clinical and family history of illness. All participants were examined by laboratory and neuroimaging analysis.

In the second moment, in the following day, they underwent a neuropsychological evaluation with a neuropsychologist blind. The instruments used for the evaluation were Cambridge Examination

for Mental Disorders of the Elderly (CAMDEX) and the cognitive battery Cambridge Cognitive Examination (CAMCOG).<sup>13</sup> As part of CAMCOG it has Mini Mental State Exam (MMSE)<sup>14</sup> and interpreted by Brucki et al.<sup>15</sup> suggestions. Clock Drawing Test<sup>12</sup> was also applied.

## Instruments

CAMDEX structure interview was created by Roth et al.<sup>13</sup> with purpose of providing diagnostic information about mental disorders of the elderly. The interview evaluates several forms of dementia, such as Alzheimer’s disease (AD), Vascular Dementia (VD) and others. Also provides relevant information on organic mental disorders, psychoses and functional declines. CAMDEX interview is able to investigate commitment in basic and instrumental activities of daily living, paranoid characteristics, mental functioning, anxiety, depression and personality. Is important to point out of all these information, it is questioned how long the changes started, how long the changes are present and whether these changes occurred abruptly or started slowly and gradually. CAMCOG is neuropsychological evaluation from CAMDEX interview and corresponds 67 items. It’s access memory, attention, concentration, orientation, language, abstract thinking, calculation, praxis and perception.

MMSE is one of the most important screening tests of the world and it is capable to measure cognitive decline and also monitors therapeutic response. MMSE evaluate memory, orientation, attention, praxis and language.<sup>14</sup>

In 1953, Clock Drawing Test (CDT) was created with the purpose to evaluate performance of parietal lobes and since 1986 it is also used as screening of executive function. CDT impairment can be observed in dementia patients. In the elderly with frontal dysfunction, it is possible to observe execution errors in the position of the hands in indicating the correct time or its size (hands that exceed the contour of the circle). The evidence of cognitive decline becomes more evident when the patient is asked to put the hands indicating eleven hours and ten minutes (11 hours and 10 minutes) and this command requires abstraction.<sup>12</sup>

In addition to the cognitive evaluation it was applied Geriatric Depression Scale (GDS) with 15 items on a dichotomic scale (“yes” or “no” answers) to evaluate depressive symptoms. A score above 5 points indicated depression signs.<sup>16</sup> Daily life activities was evaluate by Pfeffer Functional Activities Questionnaire (PFAQ) with a 10 items that mainly evaluate the instrumental activities of daily life, in Likert scale, with each item having a score range from 0 to 3 points. In PFAQ the highest score indicates a worse performance in daily life. Final results range from 0 to 30 points, with the cut-off above 5 points indicate impaired.<sup>17</sup>

### Neuroimaging and clinical data

Single Photon Emission Computer Tomography-Spect (SPECT) or Magnetic resonance imaging presents within the normality for age and absence of signs of perfusion and/or metabolic deficit. None of the patients has clinical problems like diabetes, hypertension and thyroid dysfunction. The participants were medicated with 0.25mg Risperidone for 10 days and after 0.5mg.

### Brief report of persecutory hallucination of one of the cases as an example

To exemplify the richness of the symptoms of persecutory delusions, it was chosen to present the reports of one of the patients, to show the vivid kind of persecutory delusions.

Mrs Silvana (fictitious name), 73 years old, female, with a schooling degree (4th grade), most of her life worked as housewife and worked with crops and farm animals. About a year ago she has become a forgetful person; it gets worse when she is tense. In the last two months her emotional state has been altered (problems with her neighbors). Her son brought a report of the patient's activities in the last 60 days:

- a. She says that the neighbor hired people to kill her;
- b. Listens to the neighbor's plans who is hiring someone to kill her;
- c. She said that neighbors can hear her through the phone;
- d. She locks the house and does not open it because she fears the neighbors. She also complains about the neighbors stealing control of the gate, so they can access to the house, and when her son shows her the gate control, she does not believe that it is the control that she has always used, and says it is a different control that the neighbors replaced;
- e. She still says the neighbors got into the house and stole some of the oldest clothes for them recognized her when she gets out of the house. So, when she leaves the house, she wears better clothes, because the clothes could confuse the killers;
- f. Mrs Silvana is not nervous, but she becomes sad when her son does not believe in her. She feels anguish, sadness, melancholy and the desire to cry for this matter (persecution of the neighbors).

## Results

Table 1 describe expected outcomes and patients performance on cognitive instruments, depression scale and functional activities of daily life. There is a satisfactory performance of cognition, no depressive signs and no impairment in activities of daily living. Regarding cognitive functions, none of the patients presented impaired. The language had an average score of 25.8points (maximum of 28points), memory presented a mean of 19.2 points (maximum of 24points), perception presented mean score of 7,2points (maximum 9points), the average praxis score of 10.4points (maximum of 12 points) and orientation with 9.4 points (maximum of 10points). Among the superior's cognitions, memory was the one that showed the highest standard deviation among the results, according to Table 2. Considering blood tests, none of the patients had altered thyroid hormone, syphilis and levels of vitamin B complex.

**Table 1** Mean of the instruments used in the neuropsychological evaluation

Instrument	Mean score	Expected results	Classification
Mini Mental State Exam (MMSE)	26,2	25	Satisfactory
Cambridge Cognitive Examination (CAMCOG)	84,4	80	Satisfactory
Clock Drawing Test (CDT)	18,8	18	Satisfactory
Geriatric Depression Scale (GDS)	3,2	< 5	Satisfactory
Pfeffer Functional Activities Questionnaire (PFAQ)	0	< 5	Satisfactory

**Table 2** Mean and standard deviation (sd) of cognitive functions, according to CAMCOG evaluation

Cognition	Mean	Sd	Maximum score
Language	25,8	1,64	28 points
Memory	19,2	2,95	24 points
Perception	7,2	1,30	9 points
Praxis	10,4	1,51	12 points
Orientation	9,4	0,57	10 points

Table 3 presents a description of the signs and symptoms observed during the evaluation of CAMDEX interview such as functionality, paranoid characteristics and personality aspects were analyzed. It can be verified no impairment of daily life activities and cognitive function, which excluded the hypothesis of Major Neurocognitive Disorder (dementia syndrome), such as proposed the diagnostic criteria from DSM-5<sup>6</sup> and NIA-AAW.<sup>18</sup> It was also excluded the hypothesis of Minor Neurocognitive Disorder (Mild Cognitive Impairment) because there is no evidence of cognitive impairment in any instruments that were applied. Patients did not present alterations in personality traits.

**Table 3** Differential diagnosis description

Function	Performance	
	Absent	Present
Basic and instrumental daily life activities	X	
Cognitive decline on instruments	X	
Persecutory illusion		X
Early onset symptoms in adulthood	X	
Later onset symptoms (aging)		X
Positive symptoms (delusions)		X
Personality deterioration	X	
Negative symptoms (depression)	X	

Due to the absence of depressive signs and symptoms, the hypothesis depression delusional (GDS=3,2) it's also excluded, as it shown in Table 1. The diagnosis of schizophrenia spectrum disorder is dismissed because it shows no symptoms of hallucinations in the course of life and because the patients did not show deterioration of their personality.<sup>6</sup> Using DSM-5 manual the diagnosis that approaches of the description of this study is Delusional Disorder. However, DSM-5 does not mention of the types of symptoms and does not describe the cognitive and functional performance of the patient with this disorder (Delusional Disorder).

According to the discription in table 3 and based on the criteria evidenced by Caixeta et al.<sup>4</sup> our brief report study suggests paraphrenia with the presentation of persecutory delusions well-elaborated with later onset symptoms in old age and preservation of functionality, personality and cognition. Diagnostic synthesis criteria are presented in Table 4.

**Table 4** Differential diagnosis between late onset schizophrenia and paraphrenia, according to Caixeta, Reimer et al.<sup>4</sup>

Symptoms	Late onset schizophrenia	Paraphrenia
<b>Aging</b>	<b>Present</b>	<b>Present</b>
Delusions presents	Yes	Yes
Positive symptoms	Mild	Severe
Negative symptoms	Mild	Severe
Antipsychotics response	Mild doses	Intense doses
Cognition	Mild decline	Preserved
Functionality	Preserved	Preserved
Organic brain disorder	Absent	Absent

## Discussion

Brief report study had a purpose to discuss persecutory delusions in elderly patients without structural alteration in neuroimaging exam, with functionality, personality and cognition preserved. Term “paraphrenia” is not included in current diagnostic manuals and it is not well known.<sup>4</sup> DSM-5 manuals presented a description of delusional disorder characterized by delusions lasting at least one month and may not present another psychotic symptom; do not meet criteria for schizophrenia; do not present behavioral impairment; do not present marked manic and depressive episodes; and do not be in use of any substance or other medical condition that justifies delusions.<sup>6</sup> DSM-5 also points to a condition with a higher prevalence in older patients<sup>6</sup> but does not present incidence, prevalence or who are these “older patients” that the manual describes.

Regarding “Paraphrenia” term Caixeta et al.<sup>4</sup> presents a chapter distinguishing late onset schizophrenia from paraphrenia and, according to the criteria presented by the authors (1. Presence of delusions 2. Preserved personality 3. Cognitive and functional decline, 4. Understanding of behavioral change, and 5. Absence of organic brain disorder) our patients meet the diagnostic criteria for paraphrenia. On the other hand, late-onset schizophrenia is described with a decrease in positive and negative symptoms, cognitive decline is mild and the patient responds with few doses of antipsychotics. Both conditions are more frequent in females. Our cases came back after one month taking risperidone of 0.5mg and that was adjusted in later sessions to 1mg and according to reports of relatives there was improvement of the symptoms, but still with ideas of reference present in less frequency. Regarding the case of Mrs Silvana, due to the fact that she presented mild anxiety and depressive symptoms, that were reactive to the fact that no one believed in her delusions (lack of insight), because she changed her routine due to the fear of the neighbors, for this reason it was necessary to make several adjustments of the medication, because of duration and intensity of delusions, the final diagnosis was paraphrenia (Table 3). However, Caixeta et al.<sup>4</sup> point out that the best prognosis is that of paraphrenia, which responds better to medication, but the difficulty in treating the patient with paraphrenia is in adherence to the treatment, considered long term, since the insight about the disease is absent or partial, that is, the delusions do not completely disappear. This fact justifies the patient’s motive, after the introduction of risperidone of 1mg, continues to be concerned about the neighbors.

The preservation of personality, functionality and cognitive

functions and appearing of delusions can be justified by the involvement of the entorhinal cortex, located in an area adjacent to the hippocampal region. According to Casanova<sup>10</sup> there is presence of neurofibrillary entanglements in the entorhinal cortical region causing the delusions. The author also points out the risks of these patients developing dementia in the evolution of the disease. This data corroborates the ideas discussed by Caixeta et al [4] rise the attention to the risk of developing dementia in patients with a diagnosis of paraphrenia. The hypothesis raised by Casanova<sup>10</sup> of the existence of neurofibrillary entanglements in the hippocampal region explains the risk of these patients to evolve to dementia. The follow-up of our cases did not indicate cognitive decline, perhaps due to the fact that they are followed up for about only 8 months.

A limitation of our study is participants are still in follow-up and no functional and cognitive decline has been observed to corroborate with the studies that described about paraphrenia cases evolving to dementia. It is necessary to continue following the cases and to carry out a new neuropsychological evaluation after one year of conduct. It is necessary future studies with a great number of patients to improved diagnosis of paraphrenia and its prognostic.

## Conclusion

Paraphrenia represents one of the most challenging psychiatric disorders for psychiatrists and psychologists, and this is due to the description of well-detailed persecutory delusions, however in a condition of personal, functional and cognitive preservation.<sup>4</sup> Late-onset schizophrenia has its personality highly affected. In dementia cases the condition of delusions may arise, but the patient presents cognitive and functional decline.<sup>6</sup>

According to the criteria raised the cases refers to late onset paraphrenia. Delusional disorder, described in DSM-5, may contribute to the diagnosis, although there is a lack of information about its incidence and prevalence in the elderly patients. Because of life span late psychotic disorders can become frequent and disorders like paraphrenia and late-onset schizophrenia deserve further studies that explain its origin, right treatment and prognosis.

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## Conflict of interest

Author states that there was no conflict of interest.

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