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Review

DEPRESSION IN PARKINSON`S DISEASE – PROFILE AND ASSESSMENT

Desislava E. Marinova,
Maya P. Danovska,
Yoanna V. Todorova,
Trayana Y. Obreshkova

Department of Neurology and Neurosurgery, Medical Faculty, Medical University of Pleven, Pleven, Bulgaria

Summary

Depression and anxiety are the most common nonmotor symptoms in Parkinson`s disease-NMSPD in the department of the neuropsychiatric disorders. Depression is present in all stages of PD - early and advanced even in premorbid stage of PD. The incidence of depression in PD varies in large limits according of used methods and criterions. Some somatic symptoms are part of the depression syndrome. At the presence no consensus exists about the etiology of depression in PD. The concomitant occurrence of depression and PD and the overlapping symptomatology of PD and depression usually lead to the terminological discussion and discrepancy. To explain the high prevalence of depression in PD some hypotheses have been proposed. Many scales were used for assessment of depression in PD. The properties and critique of nine scales was discussed.

Keywords: Parkinson`s Disease (PD, nonmotor symptoms in Parkinson`s Disease (NMSPD), health related factors quality-of-life (HRQL)

Introduction

Among the neurological disorders Parkinson`s Disease (PD) and Alzheimer dementia are most common. The classical clinical hallmark of PD is cluster of motor symptoms as resting tremor, rigidity, hypokinesia and bradykinesia, and postural instability. It is well known that a variety of many non-motor symptoms in Parkinson`s Disease (NMSPD) also are present. These NMSPD, about 30, was describes in detail and grouped in 9 groups [1]. Depression and anxiety are the most common NMSPD in the department of the neuropsychiatric disorders [2]. They are present in all stages of PD - early and advanced even in premorbid stage of PD and have a greater significance for the health-related factors of quality of life and may lead to cognitive decline [2-4].

Corresponding Author:
Desislava Marinova
Department of Neurology and Neurosurgery, Medical Faculty, Medical University, 1 Sv. Kliment Ohridski str., 5800 Pleven, Bulgaria,
email:desislavamar@gmail.com

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Epidemiology

The incidence of depression in PD varies in large limits according of used methods and criterions. According to studies published in 20-th century between 1922-1990 the mean rate of depression in PD was 40% (range: 4-70%) [5]. The recent studies also show that depression is quite frequent and affects 17-40% of the patients with PD and vary widely across studies ranging from 2.7% to 90% and more [6-8]. The reasons tor so match large variation of depression in PD may include different factors as nature of population studied; statistical methods used and criteria for assessment of depression [8]. Shulman et al (2002) discus another factors with influence of the incidence of depression in PD. Patients with PD frequently do not informs their physicians about their feeling of depression or the neurologist during the routine office visit do not ask the patient about depressive feelings and failed to recognize the presence of depression [9]. Unfortunately depression and anxiety are poorly recognized and underdiagnosed and nontreated [10]. Depression in PD is treatable and the adequate multidisciplinary treatment enhances the quality of life and the course of Parkinson`s disease [4, 10].

Clinical presentation of depression

Feeling of worthlessness, loss of pleasure and mood are the code symptoms of depressed patients. They are also characterized by filling of guilt and lack of self-esteem [1, 8]. The presence of somatic symptoms, may accompany depression symptoms such as masque face appearance, movement retardation, loss of appetite and loss of weight. These symptoms are also present in not depressed PD patients. Hence differentiating between depression and PD can, therefore, be difficult, and may result in both overdiagnosis and underdiagnosis [9].

Assessment of depression in Parkinson`s disease

The assessment of depression in PD is based on standardized criteria for major depression in DSM-5 [11]. But the problem of using these criteria, is that some symptoms of depression are overlapping with other symptoms in PD as psychomotor retardation, insomnia, and loss of energy [12] Another diagnostic problem of depression in PD is some DSM criteria for depression exclude about a half PD patients with clinically presented symptoms of depression [9]. Many scales were used for assessment of

Table 1. Properties of depression scales in Parkinson's disease [15]

Scale	Sensitivity	Specificity	Cutoff score for screening in patients without PD	Cutoff score for screening in patients with PD	Sensitivity to change
HAM-D	++	++	13/14	9/10	+
MADRS	++	++	6/7	14/15	+
BDI	+	+	9/10	13/14	+
HADS	+	+/-	7/8	10/11	na
SDS	na	na	50/51	na	+
GDS 30	++	++	9/10	9/10	na
GDS 15	++	++	2/3	4/5	na
CSDD	na	na	6/7	na	na
CES-D	na	na	15/16	na	na
UPDRS part 1	na	na	na	na	na

+/- sensitivity/specificity limited; + some specificity sensitivity; ++ good specificity sensitivity; na – not sufficiently assessed in patients with PD;
HAM-D – Hamilton Depression Rating Scale
MADRS – Montgomery-Asberg Depression Rating Scale
BDI – Beck Depression Inventory
HADS – Hospital Anxiety and Depression Scale
SDS – Self-rating Depression Scale
GDS – Geriatric Depression Scale (30; 15)
CSDD – Cornell Scale for Depression in Dementia
CES-D – Center for Epidemiologic Studies Depression Scale
UPDRS part 1 – Unified Parkinson's Disease Rating Scale Part 1

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depression in PD [1]. Nine among most common used scales (6 self-reported and 3 clinician-rated depression scales) was performed by Williams in 229 PD patients to compare their utility for the assessment of depression in Parkinson`s disease [13]. The area under the curve (AUC) of each scale was estimated. The specificity ranged was 0.60-0.88 and sensitivity ranged 0,66-0,85. The conclusion was that the GDS-30 is the most efficient scale to use in PD depression. GDS-30 is with favorable psychometric properties. All other scales, (except UPDRS Depression), are also suitable for depression assessment „when PD-specific cutoff scores are used" [13]. A compact group of experts including psychiatrics, neurophysiologists and movement disorders specialists was assigned a task to evaluate the rate the present tools for the diagnosis of repression in PD (Table 1) [14].

In these relation, the properties of available and most common used scales for assessment of depression, critiques and recommendations was discussed by Schrag and cohort of experts from USA and Europe [15, 16]. As the symptoms of depression in PD are underdiagnosed in about of half of patients [9], the problem of assessment and diagnosis remain actual. Another attempt for clinical guidelines presents the discussion of "Delphy Consensus" for depression in PD [17].

Etiology and pathogenesis of depression in PD

At the presence no consensus exists about the etiology of depression in PD. The concomitant occurrence of depression and PD and the overlapping symptomatology of PD and depression usually leads to the terminological discussion and discrepancy. The question is whether the depressive symptomatology is part of the PD disease or different disease.

On the other hand depression may precede PD or may be part of PD. Another problem for discussion is the question is depression in PD „reactive or organic" or both [18]. In the recent years, a more integrated, neuropsychiatric investigation of body and mind has been promoted. Using the CT, MRI and some functional computer techniques based on computer science and isotopes, diseases of the cerebrum, formerly regarded as reactive or functional, were found to have visible morphological and functional abnormalities [19].

Risk factors

The general risk factors for depression in the general population are well known and include familial history of depression, female sex, higher age and concomitant somatic diseases [20]. About the disease-specific risk factors for depression in PD there are scanty data with ambiguity validity. In some studies, was shown that severe disability, earlier age of onset, more on/off fluctuations, family history of PD, are risk factors [20], in other study the brain disturbance is another disk factor [21]. The influence of genetic factors is ambiguous. Arabia et al (2007) was investigated the risk of depression in first-degree relatives PD patients compared with PD free controls and was found an increased risk of depression and anxiety in PD cohort. Their findings suggest that depression and anxiety may be related with familial accessibility [22]. In other studies no associations of any of the genetic forms of PD was found. It seems that depression does not be associated with genetic phenotypes of PD [23], but the results of one study demonstrate the prevalence of depression in carriers of one gene (LRRK2 G2019S) compared with non-carriers [24]. Future prospective longitudinal studies of genetic factors influence on the clinical presentation of depression in PD are needed in order to improve the therapeutic strategy and prognosis of the disease.

Neuroanatomy and pathophysiology of depression

To explain the high prevalence of depression in PD some hypotheses have been proposed. The "serotonergic" hypothesis was proposed by Mayeux et al (1984) related with altered serotonin metabolism in depressed patients demonstrated with low level of serotonin in cerebrospinal liquor [25]. It known that serotonin poses ability to suppress striatal dopamine releasing. The decreased serotonergic level was established as a risk factor for depression [26, 27] and may be related with the high frequency of depression in PD and the occurrence of depression before the established diagnosis of PD [25]. Some morphological data are available from autopsy study of PD patients with depression. Increased loss of serotoninergic neuronal structures was found in the dorsal raphe nucleus compared with controls PD patients without depression [28].

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The loss of serotonergic neurons of the same location was confirmed by more contemporary imaging methods- transcranial sonography and magnetic resonance in PD patents with depression [25, 26].

More recent study was tested the serotonergic hypothesis in an experimental approach and do not confirm the specific serotoninergic vulnerability op PD patients for depression and not support the serotonergic hypothesis [29, 30].

Conclusion

Depression and anxiety are the most common neuropsychiatric symptoms in PD. Depression is present in all stages of PD – early and advanced even in premorbid stage of PD. The incidence of depression in PD varies in large limits according of used methods and criterions. Depression and anxiety in PD are poorly recognized and underdiagnosed and nontreated. The assessment of depression in PD is based on standardized criteria for major depression in DSM-5. Many scales for detection of depression are available at present; the GDS-30 is one of the preferred scales to use in PD depression.

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