

Cognitive impairment in patients with psoriasis: A clinical study in teaching hospital

Kumari Padma¹, Sagar Subhash Nanaware², Aruna Yadiyal³, P. John Mathai⁴

¹Departments of Psychiatry, ²Medicine, B.K.L Walawalkar Rural Medical College, Dervan, Chiplun, Maharashtra, ³Department of Psychiatry, Father Muller Medical College and Hospital, Mangalore, Karnataka, ⁴Jublee Medical College and Research Centre, Thrissur, Kerala, India

ABSTRACT

Aim: Psoriasis is associated with a variety of psychological problems including poor self-esteem, sexual dysfunction, anxiety and depressive disorder, suicidal ideation and significant cognitive impairment. The aim of the study is to evaluate the frequency of cognitive impairment in patients with psoriasis. **Method:** 200 subjects were included for the study. The tools used in the study were Standard Mini-Mental Status Examination (SMMSE) and Brief Cognitive Rating Scale (BCRS) for assessing cognitive functions. The results obtained were analyzed using the Chi-square test and student test. **Results:** Patients with psoriasis had cognitive deficits in the domain of attention, concentration and total scores of SMMSE and BCRS.

Keywords: Cognitive impairment, psoriasis, psychodermatosis

Introduction

Psoriasis is a chronic relapsing disease with characteristic scaly lesions varying from pinpoint plaques to extensive skin involvement, nail dystrophy, and often arthritis.^[1] Two-peak age for the disease; the early age of onset is between 16 and 22 years, and latent age of onset is between 57 and 60 years.^[2]

Psoriasis is a chronic illness requiring medical as well as social attention. Long standing Psoriasis leads multiple disabilities which can predispose the patient to develop physical as well as mental disabilities. Psoriasis is chronic debilitating disorder associated with social stigma leading to psychological problems. Stress and psychological disturbance can lead to relapse of psoriasis causing

poor prognosis of illness. Primary care and early psychological intervention is essential for physical and mental wellbeing of the individual.

A study conducted by, Marco *et al.* among 50 adult outpatients and 50 age- and sex-matched healthy controls using a battery of neuropsychological tests investigating major cognitive domains, psychopathology (anxiety and depression), alexithymia, and HRQoL. At the bivariate level, psoriasis patients (compared to healthy controls) performed worse on most of the neuropsychological tests, and they also reported more anxiety and depressive symptoms, higher scores for alexithymia, and worse physical and mental health. At the multivariate level, cognitive performance was independently associated with psoriasis even when controlling for psychopathology and alexithymia.^[3]

A study done by Luiza Marek-Józefowicz including 188 subjects (97 patients with psoriasis and 91 healthy controls) assessed the dorsolateral prefrontal cortex functions, the Trail Making Test and the Stroop test was applied. Severity of psoriasis

Address for correspondence: Dr. Kumari Padma, Department of Psychiatry, B.K.L. Walawalkar Rural Medical College, Dervan, Chiplun Maharashtra, India. E-mail: skpadma444@gmail.com

Received: 17-01-2020

Revised: 12-03-2020

Accepted: 22-05-2020

Published: 25-08-2020

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_104_20

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Padma K, Nanaware SS, Yadiyal A, Mathai PJ. Cognitive impairment in patients with psoriasis: A clinical study in teaching hospital. J Family Med Prim Care 2020;9:4001-4.

was assessed by means of the PASI index. Compared to healthy subjects, psoriatics scored lower in neuropsychological tests assessing memory and executive functions.^[4]

A study done by Gisondi *et al.* on 41 patients with psoriasis and 37 controls. The study found a higher prevalence of MCI in patients with psoriasis compared to their partners without psoriasis (controls) and to that reported in the general population aged 60–65 years, approximately 10–20%.^[5,6] Patients with psoriasis had multiple precocious impairments of cognitive functions, including long-term verbal memory, executive functions and attention, configuring a multiple domain MCI. This puts them at a greater risk of developing dementia compared to those patients with an isolated MCI. The pattern of errors in the cognitive tests of patients with psoriasis is indicative of an involvement of the subcortical frontal areas of the brain. Moreover, free recall and Weigl's tests were also impaired in the majority of our patients, suggesting their inability to use various cognitive strategies, including semantics, to recall information.^[5]

A study done by Tausk *et al.* found an association with other systemic diseases including psychological, inflammatory, or metabolic diseases that place these patients at a greater risk of having a premature cognitive impairment.^[6] A study done by Abuabara *et al.* found that patients with severe psoriasis were at an increased risk of death from dementia compared to the non-psoriatic population in the UK (hazard ratio 3.64; 95% confidence interval 1.36–9.72. There is a possibility of common genetic background links psoriasis to Alzheimer's disease. Apolipoprotein E gene polymorphism, in particular the Apo e4 allele, has been associated with both diseases.^[7] A study done by Gupta *et al.* found that free recall and Weigl's tests were also impaired in the majority of patients, suggesting their inability to use various cognitive strategies, including semantics, to recall information. Patient with psoriasis had significant cognitive dysfunction associated with the activity of the prefrontal cortex.^[8] A study done by Richards *et al.* found that patients with psoriasis on neuropsychological assessment scored significantly worse than healthy people in two aspects of working memory. In the TMT test for assessing visual-spatial working memory performance, patients with psoriasis obtained the longer execution times in both parts of the test, which indicates reduced psychomotor speed, lower efficiency, and control switching between the two processes and poorer visual memory. Similarly, in the field of verbal memory they obtained worse results compared with healthy people.^[9] A study done by Krawczyk *et al.* found MCI was common patients with chronic plaque psoriasis and suggested that psoriasis in the pathogenesis of cognitive impairment. Patients with psoriasis may need a thorough neurological evaluation in order to detect early MCI, and systemic therapy for psoriasis might improve cognitive impairment.^[10] A study done by Rolls *et al.* found that greater the severity of depressive dimension scale TEMPS-a, the less psychomotor speed and poorer verbal memory performance presented subjects tested. Dimension anxiety scale TEMPS-A was correlated with a worse turn of speed and psychomotor efficiency worse spatial memory.^[11-13]

Material and Methods

This is a cross-sectional clinical study conducted in the Department of Psychiatry and Dermatology of Father Muller Medical College, Kankanady, Mangalore. 100 healthy controls and 100 patients with diagnosis of Psoriasis admitted in the Dermatology wards or attending the outpatient during the period between Nov 2014 and Jan 2016 were included in the study. The institutional ethical committee clearance was obtained. A written informed consent was obtained from all the patients. All the subjects ($n = 200$) underwent a thorough physical and mental status examination. The clinical assessment and the evaluation of cognitive impairment were done at the first visit. The sociodemographic and clinical information were collected from all subjects and recorded using a specially designed proforma for the clinical study. All the subjects were evaluated for the cognitive functioning using Standardized Mini Mental Status Examination and Brief Cognitive Rating Scale. Subjects between the age group of 20–65 year who were consenting for the study. OP and IP patients with definite diagnosis of Psoriasis were included for the study. Patients with co morbid major medical or surgical disorder and with co morbid dermatological disease were excluded. Patients with Severe Psoriasis were excluded. The results obtained were analyzed using the Chi-square test and student test.

Results

Demographic data

Subjects in the age group of 31–40 years constituted the major part. 42% of subjects in the age group of 21–40 years. Age was not a confounding factor in the statistical assessment. The sample constitutes majority of males (64%) among the cases. The largest group in subjects were Hindus (49%). Majority of the subjects were from dominant caste with 74%. 14% of the subjects have completed education upto high school, 44% upto middle school, 2% upto degree and 10% upto predegree. 22% has completed their education upto primary school and 4% were illiterate. In my sample, 99% of the subjects were married and 1% were single. 55% of the subjects were un-skilled whereas 35% were skilled, 5% were government job, 5% were private employee. 41% of the subjects resided in urban area, whereas 59% resided in rural area. 84% of the subjects lived in nuclear families, whereas 16% in joint families. 5% of the subjects had an income >20,000. 22% had an income between 10,000 and 20,000. 69% had an income between 5000 and 10,000, whereas 4% had an income less than 5000. 69% of the subjects fell into the category II of SESS, 22% in category III, 5% in category IV and 4% in category I.

Clinical data

44% had duration of Psoriasis for 1–5 years. 33% had duration of 5–10 years, 18% less than 1 year followed by 5% in more than 10 years. 99% of the patients had plaque type of Psoriasis. One patient was diagnosed to have Guttate type. All patients with Psoriasis were on topical steroids.

Data regarding SMMSE

Patients with psoriasis had cognitive deficits in the domain of attention, concentration and total scores of SMMSE [Table 1].

Data Regarding BCRS

They also had higher cognitive deficits in the total scores of BCRS [Table 2].

Discussion

Cognitive impairment

The result of the present study indicates that there is significant cognitive impairment in patients with psoriasis in attention, concentration domain, and total score of SMMSE. Results of the present study are consistent with the reports of earlier investigations.^[5-7,9] Presence of cognitive impairment have been documented in multiple domains including long-term verbal memory, executive functions and attention. In the current study the total mean score obtained by patients with psoriasis on SMMSE was 22.45. SMMSE is less than ideal in evaluation of mild cognitive impairment and is biased towards verbal items and does not adequately measure other cognitive functions like ability to attend to relevant input ability to solve abstract problems, psychomotor speed and visuospatial ability.

To overcome this limitation this study has employed BCRS to assess cognitive functions in detail. The brief cognitive rating scale is used primarily as a measure of cognitive decline and may not be appropriate for a cross sectional comparative study such as this study. Earlier studies have not used BCRS to evaluate cognitive impairment in patients with psoriasis. In this study patients were found to have high total BCRS score. Patients with psoriasis have higher mean score indicating cognitive impairment in these individuals.

Relationship with sociodemographic and clinical variables

Present investigation reveals that increasing age has a negative effect on cognitive functions. Present investigation finds a statistically significant correlation between the age and the domains of language, construction, past memory and orientation. There is a statistical significance in the total score of SMMSE with age ($P = 0.019$). This finding is consistent with that of study done by Gisondi *et al.*^[5] Age could have been a confounding factor in the development of cognitive impairment in the present study. Gender wise comparison also showed high statistical significance in the attention concentration ($P = 0.006$), construction ($P = 0.034$) and orientation domains. The study reveals that the highly educated subjects scored better when compared to the less educated ones. There is statistical significance in the domains of attention and concentration ($P = 0.015$). People residing in rural area, unskilled workers performed poorly on all cognitive tests. There is a high statistical significance in domains of concentration recent memory and total score ($P = 0.014$) with respect to

Table 1: Data regarding SMMSE

	GROUP	n	Mean
Orientation	Cases	100	9.31
Registration	cases	100	2.81
Attention Concentration	cases	100	3.30
Recall	cases	100	2.18
Language	Cases	100	7.96
Construction	cases	100	0.88
Total score	cases	100	22.45

Table 2: Data Regarding BCRS

	GROUP	n	Mean
Concentration	cases	100	1.38
Recent memory	cases	100	1.17
Past Memory	cases	100	1.13
Orientation	cases	100	1.10
Functioning Self Care	cases	100	1.06
Total score	cases	100	1.170

occupation. Subjects who are married and from nuclear family score better in few domains. There is statistical significance in the recall ($P = 0.033$) and concentration (0.039) domains respectively. Investigator fails to find earlier studies with similar finding that. The probable reason would be that in the present study the sample consisted of more of married individuals from urban family. The present study also reveals statistical significance between monthly income and recall domain ($P = 0.015$). The finding is consistent with that of previous study.^[5,14,15]

Subjects who have longer duration of psoriasis have performed poorly in cognitive functions. Study reveals statistical significance between the duration of psoriasis ($P = 0.007$) and cognitive impairment. These results of the current study are consistent with those of previous studies.^[5-7,9]

Study reveals a statistical significant correlation between cognitive impairment and patient with psoriatic arthritis. This could mean that severity of psoriasis and its complication could lead to cognitive deficits. There was statistical significance in the domains of registration and past memory with psoriatic complication which is consistent with that of previous study.^[5-7,10]

Limitations and Merits

The sample group chosen is probably not representative of the general population because they are selected from the patients who attend a private sector medical college. Recruitment of consecutive patients ensures that there is no sample bias. The inclusion and the exclusion criteria are specific. Hence the sample consists of homogenous group of patients with psoriasis who are otherwise not compromised. The size of the sample is sufficient to calculate the prevalence of cognitive impairment, but a larger sample size is required to calculate the exact relationship of cognitive impairment with socio-demographic and clinical variable. The present investigation is a descriptive cross sectional

clinical study examining the cognitive impairment in patients with psoriasis. The subjects are assessed on one occasion only. The tools used have adequate established reliability and validity. All the tools are rater friendly, easy to administer, less time consuming thereby causing no discomfort to the patients. The assessment is not blind due the constraints of the study, therefore rater bias is possible. Further research should ideally address the following issues like larger sample, selection of representative population and sample, blind assessment, and prospective assessment on multiple occasions.

The term cognition refers to the highest level of various mental processes such as perception, memory, abstract thinking and reasoning and problem solving as well as the more integrative and control processes related to executive functions such as planning, choosing strategies and the enactment of these strategies. All the areas of cognition are not measure by SMMSE nor are rated by BCRS and domain specific tests are required. This study did not employ any specific tests to comprehensively assess cognitive function which is one of the demerits of this study.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Palfreeman AC, McNamee KE, McCann FE. New developments in the management of psoriasis and psoriatic arthritis: A focus on apremilast. *Drug Des Devel Ther* 2013;7:201-10.
2. Taner E, Cosar B, Burhanoglu S, Çalikoglu E, Onder M, Arikan Z. Depression and anxiety in patients with Behcet's disease compared with that in patients with psoriasis. *Int J Dermatol* 2007;46:1118-24.
3. Innamorati M, Quinto RM, Lester D, Iani L, Graceffa D, Bonifati C. Cognitive impairment in patients with psoriasis: A matched case-control study. *J Psychosoma Res* 2018;105:99-105.
4. Marek-Józefowicz L, Jaracz M, Placek W, Czajkowski R, Borkowska A. Cognitive impairment in patients with severe psoriasis. *Postepy Dermatol Alergol* 2017;34:120-5.
5. Gisondi P, Targher G, Zoppini G, Girolomoni G. Nonalcoholic fatty liver disease in patients with chronic plaque psoriasis. *J Hepatol* 2009;51:758-64.
6. Tausk F, Elenkov I, Moynihan J. Psychoneuroimmunology. *Dermatol Ther* 2008;21:22-31.
7. Seville RH. Stress and psoriasis: The Importance of insight and empathy in prognosis. *J Am Acad Dermatol* 1989;20:97-100.
8. Gupta MA, Gupta AK, Kirby S, Weiner HK, Mace TM, Schork NJ, *et al.* Pruritus in psoriasis. A prospective study of some psychiatric and dermatologic correlates. *Arch Dermatol* 1988;124:1052-7.
9. Richards HL, Fortune DG, Chong SL, Mason DL, Sweeney SK, Main CJ, *et al.* Divergent beliefs about psoriasis are associated with increased psychological distress. *J Invest Dermatol* 2004;123:49-56.
10. Krawczyk DC. Contributions of the prefrontal cortex to the neural basis of human decision making. *NeurosciBiobehav Rev* 2002;26:631-64.
11. Rolls ET, Grabenhorst F. The orbitofrontal cortex and beyond: From the Affect to decision-making. *Prog Neurobiol* 2008;86:216-44.
12. Menter A, Gottlieb A, Feldman SR, Van Voorhees AS, Leonardi CL, Gordon KB, *et al.* Guidelines of care for the management of psoriasis and psoriatic arthritis: Overview of psoriasis and guidelines of care for the treatment of psoriasis with biologics. *J Am Acad Dermatol* 2008;58:826-5.
13. Stern RS, Nijsten T, Feldman SR, Margolis DJ, Rolstad T. Psoriasis is common, carries a substantial burden even when not extensive, and is associated with widespread treatment dissatisfaction. *J Invest Dermatol Symp Proc* 2004;9:136-9.
14. Fortune DG, Richards HL, Kirby B, McElhone K, Markham T, Rogers S, *et al.* Psychological distress impairs clearance of psoriasis in patients treated with photochemotherapy. *Arch Dermatol* 2003;139:752-6.
15. Biljan D, Laufer D, Filakovi D, Situm M, Brataljenović T. Psoriasis, mental disorders and stress. *Coll Antropol* 2009;3:889-92.