Mood Disorder: Comparative Study between Old and Young Age Depressed Patients

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Abstract

Depression and cognitive impairment are among the most important mental health problems and have sever consequences. Investigations of cognitive disturbances among patients with mood disorders have yielded inconsistent results. Although marked neuropsychological deficits have been reported in elderly patients and in young age patients with severe depression, the severity of cognitive impairments in medically healthy younger ambulatory adults with depression has not been well characterized. This study aimed at comparison of sociodemographic background, depression severity, and cognitive deterioration pattern in elderly depressed with young depressed patients. Sixty cases of both sexes ,half of them above age of fifty, cases were selected from out patient clinics of the institute of psychiatry and geriatrics clinic, Ain shams university, each case subjected to history taking using Ain shams psychiatry interview sheet, physical examination, and psychiatric examination. Diagnosis of depression according to ICD-10 criteria and Hamilton rating scale for severity of depression. Also ICD-10 check list for mental disorders, A comprehensive battery of standard neuropsychological tests for measuring of cognitive functioning including subsets of Wechsler memory scale - revised WMS-R test, and Vigil continuous performance test were administrated. A comparable control groups consisted of sixty volunteers apparently healthy of both sexes, half of them below age of fifty and each subject underwent the same as cases. The study results showed a significant difference between depressed elderly and depressed young patients in some cognitive functions for memory and attention, also in some sociodemographic data, and in severity of depression also there was a highly significant statistical difference as regards age and age of onset of the illness. These findings means that the change in cognitive profile in both patients group is not due to duration of illness it self but due to age and age of onset of depression. The study recommends consideration of cognitive affection in rehabilitation plan, and further studies to ensure our results.

Introduction

Depression and cognitive impairment are among the most important mental health problems in elderly people. Depression, sub-threshold (for DSM-IV diagnosis of major depression) depressive symptoms and cognitive impairment have severe consequences, including diminished quality of life, functional decline, increased use of services, and high mortality ***(Alexopoulos GS, et al., 1996, Unützer J, et al., 2000, Diana D, et al., 2005)***. Late onset depression and cognitive impairment often occur together, suggesting a close association between them ***(Migliorelli R, et al., 1995, Jorm AF, 2001, Zubenko GS, et al., 2003)***. It is not known, however, whether depression leads to cognitive decline or vice versa ***(Jorm AF, 2001, Schweitzer I et al., 2002)***. Clinical practice and research evidence suggest that depression precedes cognitive decline in old age ***(Devanand DP et al., 1996, Yaffe K et al., 1999, Schweitzer I, et al., 2002, Paterniti S et al., 2002, Green RC et al.,***

2003, Wilson RS et al., 2004). Late-life depression has also been associated with other adverse outcomes, such as increased medical morbidity ***(Murphy E, 1983, Baldwin RC, 1991, Alexopoulos GS 1995),*** increased use of health services ***(Unützer J, et al, 1997)*** and, in some studies, mortality ***(Penninx BW, et al., 1999, Covinsky KE, et al., 1998, Pulska T, et al., 1997, Whooley MA, Browner WS, 1998)***. According to the Global Burden of Disease Study, major depression ranks fourth in the world among causes of early death and disability ***(Murray CJL and Lopez AD, 1997)*** and research findings about the association between depression and mortality have been contradictory ***(Pulska T, et al., 1997, Whooley MA and Browner WS, 1998, Schulz R, et al., 2000, Wulsin LR, 2000)***. A Number of research teams have reported statistically significant associations between depressive symptoms and mortality. Some of these studies have not been able to control for differences in a number of demographic, medical, and behavioral health risk factors that may be associated with both depression and the risk of death and thus might confound this relationship. However, Schulz et al. 2000 and Covinsky et al. 1998 found a statistically significant relationship between increased depressive symptoms and mortality after adjustment for comorbidity, functional impairment, and cognitive impairment. A subset of studies has focused on the relationship of depression and cardiovascular mortality or the relationship between depression and mortality in patients with cardiovascular disease. These studies have reported significant associations between depression and mortality ***(Barefoot JC, et al., 1996, Barefoot JC and Schroll M, 1996, Murberg TA, et al., 1999, Frasure-Smith N, et al., 1999, Frasure-Smith N, et.al., 1993, Kaufmann MW, et al., 1999)***.

Objectives

1. Study the effect of age on the depressive of the old age.
2. Describe the pattern of cognitive affection of elderly depressed patients and comparing it by that of younger depressed patients.
3. Study if there is different in confounding variables, remission rates of depression in patients in late life from those in midlife.

Subjects and Method

Site of the study

The cases were selected from the institute of psychiatry, Ain Shams University Hospitals.

Selection of Subjects

Patient group:

They consisted of 60 patients suffering from unipolar depression according to the diagnostic criteria for research of the ICD-10, the sample was divided in to two equal groups one group below the age of 50 years and the other above 50 years all of them were tested at the acute state before starting treatment.

Inclusion criteria

Patients presenting with symptoms fulfilling the criteria for the diagnosis of depression according to the ICD-10 Diagnostic Criteria for Research.

Exclusion criteria

- Patients with below average intelligence.
- -Patients having organic illness, other psychiatric illness, or history of neurological, or drug abuse disorder or due to their refusal to enter the study.

Control group

The control group consisted of 30 individuals above the age of 50Y and 30 of them below this age with no apparent physical or psychiatric morbidity. They were matched for age, sex, and other demographic variables as far as possible with the patient group. They have no family history of any psychiatric disorder**.**

Methods

Study proper

The study proper was conducted in the period from February 2005 to the August 2005. The patients were subjected to full history using Ain Shams psychiatric interview sheet with stress on history suggestive of previous depressive symptoms, Patients were diagnosed according to the research and diagnostic criteria of the international statistical classification of diseases and related health problems (ICD-10) and the ICD-10 (1994) symptom checklist for mental disorders.

All patients underwent the following tests; (1) Wechsler memory scale revised, (2) Vigil continuous performance test, (3) Hamilton rating scale for severity of depression.

Informed Consent was taken from all subjects before they were allowed to enter the study

The control group underwent the same tests in addition to General health questionnaire.

Tools

1. Hamilton depression rating scale (HDRS)

It is a standardized measure of the phenomenology of a depressive syndrome. The total score on 17 item ranging from 0-50, scores of 7 or less considered normal; from 8-13 is considered mild; 14-18 is moderate; 19-22 is severe; and 23 and above is considered very severe.

2. General Health Questionnaire (Arabic version)

It is a self-administered questionnaire for the detection of mental disorders. There are 4 forms of GHQ: the original 60 items, and 3 shorter versions with 30, 28, 12 items. The scale of 28 items was used in its Arabic version ***(Okasha et al., 1988)***.

3. Neuropsychological Assessment:

The following tests are used for assessment of major areas of cognition:

a. Subtest of Memory (Wechsler Memory Scale Revised) ***(Wechsler, 1987)***.
   This battery is composed of a variety of subtests measuring free recall or recognition of verbal and visuospatial material, measures of recall of personal information, attention and concentration. Four of the eight subtests of the WMS-R that present good assessment of memory were chosen to the present study, they are as follows:
   I- Verbal Paired Associates: immediate and delayed recall
   II- Visual Paired Associates: immediate and delayed recall
b. Continuous Performance Test:
   Continuous performance test is used to measure reaction time, attention, vigilance, and sustained attention. Diminished sensitivity is a sign of decreased vigilance and results in a high miss rate (errors of omission). The response criterion can be diminished leading to a high false positive rate (errors of commission). Reaction time is variable that represents the average time from the onset of each stimulus to the initiation of each response.

Statistical methods

SPSS statistical software package was used for data analysis (Version 13.1, 2003, Echosoft Corp., USA). Data were expressed as mean±SD for non-numerical or

quantitative data, while as % for numerical or categorized data. The following tests were used:

1. Wilcoxon Rank Sum test for comparison between two groups for non-parametric data.
2. Chi-square test for comparison between 2 independent groups as regards proportions or percentage for numerical data.
3. Ranked Sperman correlation test to evaluate the possible association between each 2 variables among the studied group.
4. The probability of error (p) value was used to indicate level of significance as follows:

P>0.05: non significant, P<0.05: significant,
P<0.01: highly significant, P<0.001: very highly significant,

Results

Comparing depressed elderly >50ys old (group I) with depressed younger <50ys old (group II) as regards age, age of onset of depression, and duration of illness, results were as follow:

- For group I mean age ± SD was 60.90 ± 6.45ys while that for group II was 31.16 ±7.8. There was a highly sig. Stat. Diff. Between the two groups (P value < 0.01).
- For group I mean age of onset ± SD was 54.03 ±10.86ys, and that for group II was 26.3±8.04ys, and there was a highly sign. Stat. Diff. Between the two groups (P value < 0.01).
- For group I mean duration of illness ± SD was 6.94±7.4 while that for group II was 4.87±4.42ys and there was a non sign. Stat. Diff. which means that the change in cognitive profile is due to age and age of onset of depression and not to the duration of illness itself.
- Sex distribution in group I patients were 3 males (10%), 27 females (90%) while group II were 7 males (23.33%), 23 females (76.67%), there was no statistical significant difference between the two groups (P value > 0.05). meanwhile the majority of cases were females in concordance with sex distribution of depression (more in females).
- Marital distribution in group I patients was 18 (60%) were single & 12 (40%) were married, while group II were 12 (40%) single & 18 (60%) were married with no statistical significant difference (value > 0.05)
- Regarding number of episodes there was no statistical significant difference between the two groups.

Table (1): Distribution of patients according to level of education

Education	illiterate	Read & write	primary	secondary	university	P value
Group I	15 (50%)	12 (40%)	3 (10%)	0	0	< 0.001
Group II	2 (6.67%)	9 (30%)	3 (10%)	9 (30%)	7 (23.33%)	

Regarding level of education there was highly significant statistical difference between the two groups (50% of old aged depressed patients were illiterate).

Table (2): Distribution of patients regarding severity of depression

Severity	Severe	Moderate	P value
Group I	14 (46.67%)	16 (53.33%)	< 0.001
Group II	27(90%)	3(10%)	

Regarding severity of depression there was highly significant statistical difference between the two groups (90%) of old aged depressed patients were diagnosed as severe depression).

1- Comparing depressed cases > 50 ys old with their control > 50ys old we found a high statistical significant difference between the two groups as regards visual I and verbal I for regist. and verbal I for recall.

Table (3):

	Registration				**Recall**			
	Visual I		**Verbal I**		**Visual I**		**Verbal I**	
	mean	**SD±**	**mean**	**SD±**	**mean**	**SD±**	**mean**	**SD±**
Group I	8.06	3.89	13.76	4.81	3.30	1.96	5.23	1.90
Control I	10.40	2.09	18	1.57	4	1.11	6.8	0.76
P value	<0.001		<0.001		>0.01		<0.001	
Signi.	H.sig		H.sig		Non.sig		H.sig	

2- Comparing depressed subjects <50ys old with their control <50ys old we found a highly sign. stist. diff. Between cases and control as regards visual I, verbal I for registr. and verbal I for recall but visual I for recall has only a sign. St.diff.

Table (4):

	Registration				**Recall**			
	Visual I		**Verbal I**		**Visual I**		**Verbal I**	
	mean	**SD±**	**mean**	**SD±**	**mean**	**SD±**	**mean**	**SD±**
Group II	10.8	3.9	16.26	2.97	4.13	1.5	5.86	1.25
Control II	14	2.33	19.36	2.49	5	0.98	7.03	1.09
P value	<0.001		<0.001		<0.01		<0.001	
Signi.	H.sig		H.sig		Sig		H.sig	

3- Comparing depressed case>50ys with depressed case <50ys we found a highly stat. Sign diff. between the two groups in visual I and only a sign. St. diff. In verbal I for regist.

Table (5):

	Registration				Recall			
	Visual I		Verbal I		Visual I		Verbal I	
	mean	SD±	mean	SD±	mean	SD±	mean	SD±
Group I	8.06	3.89	13.76	4.81	3.30	1.96	5.23	1.90
Group II	10.8	3.9	16.26	2.97	4.13	1.5	5.86	1.25
P value	<0.001		<0.01		>0.01		>0.01	
Signi.	H.sig		Sig		Non.sig		Non.sig	

4- Comparing the two control groups we found a highly sig. st.diff .between the two groups in regist, tests and in visual I for recall.

Table (6):

	Registration				Recall			
	Visual I		Verbal I		Visual I		Verbal I	
	mean	SD±	mean	SD±	mean	SD±	mean	SD±
Control I	10.40	2.09	18	1.57	4	1.11	6.8	0.76
Control II	14	2.33	19.36	2.49	5	0.98	7.03	1.09
P value	<0.001		<0.01		<0.001		>0.01	
Signi.	H.sig		H.sig		H.sig		Non.sig	

In this study we select vigil continous performance test which test attention and comparing different groups and results were as follow:

1- In comparing depressed elderly >50ys old and their control >50ys old volunteers there was H.sig. Statis.difference between the two groups for total omission and a very highly stat. sign.diff. for total commission .

Table (7):

	Total omission		Total commission		Average delay	
	mean	SD±	mean	SD±	mean	SD±
Group I	15.23	13.77	23.23	18.81	523.16	72.52
Control I	12.40	18.25	8.80	6.04	503.11	32.43
P value	<0.01		<0.001		>0.01	
Sig	H.Sig		V.H.sig		Non sig	

2- In comparing depressed subjects <50ys old and their control there was a sign. st. diff. between the two groups for total omission and average delay and a highly sign. diff for total commission.

Table (8):

	Total omission		Total commission		Average delay	
	mean	**SD±**	**mean**	**SD±**	**mean**	**SD±**
Group II	11.33	10.50	11.70	10.08	516.31	62.75
Control II	2.76	1.92	3.26	2.66	502.98	39.28
P value	<0.01		<0.001		0.01	
Sig	Sig		H. sig.		Sig.	

3- In comparing depressed elderly >50ys and depressed younger <50ys their was a highly sign. st. diff. for total commission.

Table (9):

	Total omission		Total commission		Average delay	
	mean	**SD±**	**mean**	**SD±**	**mean**	**SD±**
Group I	15.23	13.77	23.23	18.81	523.16	72.52
Group II	11.33	10.50	11.70	10.08	516.31	62.75
P value	>0.01		<0.01		>0.01	
Sig	Non. Sig.		H. sig.		Non sig	

4- In comparing non depressed elderly control (>50ys) and non depressed younger control (<50ys), there were a hihly significant sta. diff. For total omission and average delay and a very highly sig. diff. for total commission.

Table (10):

	Total omission		Total commission		Average delay	
	mean	**SD±**	**mean**	**SD±**	**mean**	**SD±**
Control I	12.40	18.25	8.80	6.04	503.11	32.43
Control II	2.76	1.92	3.26	2.66	502.98	39.28
P value	<0.01		<0.001		< 0.01	
Sig	H.Sig		V.H. sig.		H.Sig.	

Discussion and Conclusion:

Depressive symptoms were associated with increased risk of mild cognitive impairment (MCI) as ***Deborah E, et al., 2006*** studied in a Prospective, population-based, longitudinal study on a random sample of 2220 adults 65 years or older recruited from 4 US communities. Depression was associated with worse performance in some but not all baseline cognitive composites in a study of ***Ganguli, et al (2006)***, in a twelve-year prospective epidemiological study to examine the relationship between depressive symptoms and subsequent cognitive decline in a cohort of nondemented older adults. Different researchers attempted to study associations between different cognitive functions and depression. Executive dysfunction is often part of the clinical presentation of late-life depression. Impaired ability to plan, organize, initiate, and sequence behavior has been observed in depressed elderly patients ***(Beats BC, et al., 1996 and Nebes RD, et al., 2000)***. ***Christopher F, and***

George S (2004) studied the Longitudinal Association of Initiation/Perseveration and Severity of Geriatric Depression , subjects were 157 consecutively recruited elderly patients (64 men, 93 women; mean age 72 years; standard deviation (SD): 6.9) enrolled in a longitudinal study of the course of geriatric depression. Patients were included if they were 60 years old or older, met Research Diagnostic Criteria (RDC) and DSM-IV criteria for unipolar major depression and had a score of 18 or higher on the 24-item Hamilton Depression Rating Scale (Ham) IP was assessed with the DRS-IP. The DRS-IP domain assesses verbal initiation and verbal, motor, and graph motor perseveration and results showed a significant association between concurrent Ham-D and DRS IP scores p value <0.0001, suggesting an association between IP and depression severity. Also Michael A, et al., 2005 studied Neuropsychological Differences between Late-Onset and Recurrent Geriatric Major Depression using neuropsychological measures of executive functioning and episodic memory, as well as psychopathological symptoms and comorbid medical illness, were examined in a total of 116 older adults. They found Patients with late-onset major depressive disorder showed specific deficits in attention and executive function, whereas patients with recurrent major depressive disorder exhibited deficits in episodic memory.

We studied the pattern of cognitive affection by age in elderly by comparing cognitive functions in control I (> 50ys healthy volunteers) with that of control II (<50 ys healthy volunteers) and we found a highly statistically significant difference between them in registration tests and visual I for recall but no significant statistical difference as regards verbal for recall. So, age has no effect on verbal paired associate for recall but has a highly statistically significant effect on registration and visual recall. Also, age has a highly statistically significant effect on total commission and only a significant effect on total omission and average delay for vigil continuous performance test so, registration, recall, and attention of elderly is affected by age significantly. Also our study demonstrated a negative correlations between age of persons and recall in non depressed elderly and registration in non depressed younger persons and this findings means that as the person gets older his registration and recall of memory decreases. And as regards vigilance tests as the persons ages average delay gets longer among young controls and total omission decreases in older controls and this means that as the age increases the attention and vigilance decrease. While for effect of depression on cognitive functions in elderly > 50 years old we compare them with their control group and we found a highly significant statistical effect on registration tests of memory and a verbal recall while visual recall is not stat. Significantly affected and this means that depression in elderly worsen registration which is already affected by age while a visual recall is not statistically sig. worsened by depression but depression is associated by impact in verbal recall which is not found to be affected sign. by age, in comparison to a study done by ***David J, et al., 2004*** on 500 subjects 85years old at least , to study Temporal relation between depression and cognitive impairment in old age they found immediate recall, and delayed recall to be affected. Also *Michael A, et al., 2005,* found episodic memory to be affected in elderly depressed patient with recurrent major depression.

Kathryn A, et al., 2000 studied subtypes of cognitive impairment in depressed older adults, and he found the largest subgroup had memory impairment, whereas two smaller subgroups had executive or attention deficits in addition to memory impairment, this finding is consistent with observations of others who have reported memory, executive, and attention deficits in some depressed elderly patients ***(Boone K et al., 1994, Kinderman S, and Brown G, 1997)***. For effect of depression in elderly on attention there was a statistical significant effect on total omission and a highly st. sign. effect on total commission and a non statistical significant effect on average delay and this can be explained by worsening of attention with depression total commission more than total omission but average delay not sign. affected due to depression in elderly, Affection of attention in elderly depressed also found in ***David J, et al., 2004*** study. We studied the effect of depression on cognitive functions in young (< 50 years old) by comparing young depressed group with their control and we found a highly significant effect on registration tests and verbal recall and this is as in elderly, but a statistically significant effect on visual recall which is not affected by depression in elderly under the study. Also we found depression to affect attention and vigilance tests with a highly statistically significant on total commission as we found in elderly and only a significant effect on total omission and average delay which differ from effect of depression on elderly in average delay this finding is consistent with observations of others studies as in ***King DA, et al., 1991, Raskin A, 1986, and Emery O, 1988.***

We compared elderly depressed with those younger depressed as regards cognitive functions affection associated with depression and we found for registration a highly statistically significant difference in visual paired associate and only a significant difference for verbal paired associate test while there was a non significant statistical difference for recall tests. This means that depression in elderly is associated with significant affection of registration but not recall than younger depression. Also elderly depressed showed a highly significant statistically difference as regards total commission test for attention but no significant difference for total omission and average delay tests for attention. This means that attention of elderly depressed is affected in total commission than in younger depressed but no significant difference of attention affection in average delay and total omission than younger depressed. Also we compared elderly depressed under the study with those younger as regards age, age of onset of depression and duration of illness, and we found no significant statistical difference between the two groups as regards duration of illness but a highly significant statistical difference as regards age and age of onset. This means that the change in cognitive profile is not due to duration of illness it self but due to age and age of onset of depression ***also these were found in the studies done by Alex J., and Hari Subramaniam, 2005***. Also there was no statistically significant difference between the two groups regarding sex distribution, marital state, and number of episodes. There were a highly significant statistical difference as regards severity of illness and level of education. Also our study founds a positive correlation between registration and recall of memory in all studied groups. So, impaired either of them indicates impairment of the other and so

impairment of either of them mandate assessment of the other.

Clinical applications

For study of prognosis of depression in old age compared to middle age they found that with control for confounding variables, remission rates of depression in patients in late life are little different from those in midlife, but relapse rates appear higher. These findings underline the importance of assessing factors related to patient age and not just to age itself in evaluations of risk factors for poor prognosis. So, depression is a rich field for research for clinical applications and we thought in our study to describe pattern of cognitive affection of elderly depressed patients and comparing it by that of younger depressed patients.

Recommendation

Identification of pattern of cognitive affection in depressed patients may have implications for clinical research and practice.
Our study results ensure presence of cognitive affection in depression and hence suggest a focused rehabilitation treatment.

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إن مرض الاكتئاب و القصور فŎ الوظائف المعرفيه من اهم مشاكل الصحه النفسيه و لهما مضاعفات كثيره وهامه وقد هدفت هذه الدراسه الŎ مقارنه مرضى الاكتئاب من كبار السن(خمسين سنه او اكثر) بالمرضŎ صغار السن (اقل من خمسين سنه). شملت الدراسة ستين حاله تم اختيارهم من المرضŎ المترددين علŎ العيادات الخارجيه بمركز الطب النفسŎ بجامعه عين شمس. ولقد خضعت كل حاله الŎ اخذ التاريq المرضŎ لها وتشخيصها باستخدام المقياس العالمى العالمى العاشر للامراض النفسية كما تم استخدام قائمه ملاحضه لاعراض الاضطرابات النفسيه و بعض الاختبارات من اختبار واكسلر للذكاء للكبار وقياس شده الاكتئاب باستخدام مقياس هاملتون واختبار الانتباه باستخدام اختبارفيجل للاداء المستمر. كما تم اختيار اشخاص اصحاء مطابقين للمرضŎ لمقارنه المرضŎ بهم ولقد خضع كل شخص منهم لما خضع له المرضŎ. ولقد نتجت الدراسات عن ان هناك علاقات ذات دلالات هامه احصائيه بين المجموعات المختلفه فŎ الدراسه و ذلك فŎ اختبارات الوظائف المعرفيه و شده الاكتئاب و بعض المعلومات التŎ تخص الخواص الديموجرافيه والاجتماعيه و توصŎ الدراسه بضروره الاخذ فŎ الاعتبار هذه النتائج أثناء اعداد و تطبيق خطه اعاده تاهيل مرضŎ الاكتئاب كما توصŎ بعمل دراسات أ خري علŎ عدد أكبر من المرضŎ لدراسه الاختلافات بينها و بين هذه الدراسه.

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