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Original Article

Comparison of the effects of tiapride and risperidone on psycho-behavioral symptoms of senile dementia

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Abstract: This study aimed to investigate the effects of tiapride (TIA) and risperidone (RIS) on the psycho-behavioral symptoms of senile dementia (SD). One-hundred and eight patients with senile dementia (SD) were divided into a control group and an observation group, with 54 patients in each group. The control group was administrated RIS therapy, while the observation group was administrated TIA therapy for a treatment period of 2 months. The positive and negative syndrome scale (PANSS) was used for scoring, along with comparing the treatment efficacies and the incidence rates of adverse reactions between the two groups. The PANSS scores of the two groups before treatment showed no significant difference ($P>0.05$), whereas significant differences were observed on days 7, 15, 30, and 60 after treatment ($P<0.05$). The efficacy rate of the control group was 74.1%, while that of the observation group was 88.9%, which was a significant difference between the two groups ($P<0.05$). The incidence rate of adverse reactions was 25.9% in the control group and 9.3% in the observation group, which was significantly different ($P<0.05$). TIA and RIS, both had certain positive effects on the psycho-behavioral symptoms of SD; however, TIA could more significantly improve the psycho-behavioral symptoms of SD, with lower incidence rate of adverse reactions, and hence, is worthy of further study.

Keywords: Senile dementia, tiapride, risperidone, psycho-behavioral symptoms

Introduction

Senile dementia (SD) is a common clinical disease, and refers to dementia occurring in senectitude. It is closely correlated with increasing age, and mainly appears due to the degradation of nerve functions caused by "brain aging" and vascular diseases in the elderly [1, 2]. Clinically, SD caused by aging is called Alzheimer's disease, and that caused by vascular diseases is called vascular dementia [3, 4]. According to foreign reports, among the elderly over 65 years old, 4-5% exhibit obvious SD, which increases to up to 15-20% among the elderly over 80 years old, while the populations with mild to moderate SD has increased by 2-3 times [5]. Patients with SD mainly exhibit an overall decline in intelligence, as well as a series of psychiatric symptoms such as irritability, aggression, hallucinations, and delusions [6, 7]. Patients with SD are mainly treated with antipsychotic drugs clinically, but long-term application of antipsychotic drugs might aggravate the consciousness disorders in these patients, leading to a series of side effects, and affecting their treatment outcomes [8-10]. The subjects selected in this study were 108 patients with SD treated in the Department of Neurology, the Second Affiliated Hospital of Zhengzhou University, and PLA 148 Hospital, from June 2010 to June 2013. Based on the difference in the applied antipsychotic drugs, they were divided into a control group and an observation group, in order to observe and compare the treatment efficiencies between the two groups.

Methods

Clinical data

The subjects randomly selected for this study were 108 patients with SD hospitalized in the

Table 1. The demographic and clinic information for both group patients (x-SD)

	Control group (n=54)	Observation group (n=54)	P
Age	70.2±6.34	96.6±9.89	0.89
Female (%)	22 (40.74)	22 (40.74)	1.00
Alzheimer Disease (%)	21 (38.89)	20 (37.04)	0.82
Vascular dementia (%)	24 (44.44)	23 (42.59)	0.76
Mixed dementi (%)	9 (16.67)	11 (20.37)	0.61

Table 2. Comparison of PANSS scores between the two groups before and after treatment

Time point	Control group (n=54)	Observation group (n=54)	t	P
Before treatment	96.3±10.75	96.6±9.89	0.15	P>0.05
Day 7	75.6±8.14	58.6±7.87	-11.03	P<0.05
Day 15	62.2±7.86	52.8±6.87	-6.62	P<0.05
Day 30	51.4±6.75	41.6±5.78	-8.10	P<0.05
Day 60	42.4±6.43	32.6±5.68	-8.39	P<0.05

Second Affiliated Hospital of Zhengzhou University from June 2010 to June 2013, including 64 men and 44 women, aged 65 to 79 years old, with an average age of 72.4±4.68 years. According to the difference in the administered antipsychotic drugs, these patients were divided into a control group and an observation group, with 54 patients in each group. The control group had 32 men and 22 women, aged 66 to 79 years old, with a mean age of 70.2±6.34 years. The observation group also had 32 men and 22 women, aged 65-78 years old, with a mean age of 70.8±5.25 years. There was no significant difference in the general characteristics between these two groups (P<0.05) (**Table 1**). This study was conducted in accordance with the declaration of Helsinki. This study was conducted with approval from the Ethics Committee of the Second Affiliated Hospital of Zhengzhou University. Written informed consent was obtained from all participants.

Patients who met the DSM-IV diagnostic criteria were selected for this study. The exclusion criteria included eliminate depression, lack of folic acid/VitB12, thyroid disease, parathyroid disease, alcoholism, drug poisoning, brain tumor, and traffic hydrocephalus.

Treatment methods

The control group was administrated 1 mg of RIS, twice a day, while the observation group was administrated 100 mg of TIA, twice a day. The treatment period was 2 months.

Observed indicators

The main observed indicators included the positive and negative symptom scale (PANSS) scores before and after treatment, and treatment efficacies and incidence rates of adverse reactions (including drowsiness, headache, weight loss, extrapyramidal reactions, irritability, and insomnia).

PANSS scoring criteria

The treatment efficacy was determined according to the amplitude of reduction in the PANSS score: cured, improved, effective, and ineffective-as follows: Cured: the amplitude of reduction in the PANSS score was >75%, the clinical symptoms improved substantially; improved: most clinical symptoms disappeared, and the amplitude of reduction in the PANSS score was >50% and <75%; effective: the clinical symptoms abated, and the amplitude of reduction in the PANSS score was >25% and <50%; ineffective: the clinical symptoms and neurological functions did not improve or deteriorate, and the amplitude of reduction in the PANSS score was <25%. Total treatment efficacy = cured + improved + effective.

Statistical analysis

SPSS16.0 statistical software was used for data analysis (SPSS Inc., Chicago, IL, USA). Chi-square/Fisher's exact test was applied for categorical variables. For continuous variables, ANOVA or Kruskall-Wallis test was applied. Two-sample t-test or Wisconsin Mann Whitney test was applied for analysis between the two groups. P<0.05 was considered statistically significant.

Results

Comparison of PANSS scores

There was no significant difference in PANSS scores between the 2 groups before treatment (P>0.05), while statistically significant differences in PANSS scores were observed between the 2 groups on days 7, 15, 30 and 60 after treatment (P<0.05, **Table 2**).

Table 3. Comparison of treatment efficacies between the two groups

Group	Control group (n=54)	Observation group (n=54)	X^2	P
	Cases (%)	Cases (%)		
Cured	12 (22.2)	16 (29.6)		
Improved	18 (33.3)	20 (37.0)		
Effective	10 (18.5)	12 (22.2)		
Ineffective	14 (25.9)	6 (11.1)		
Total efficacy rate (%)	74.1	88.9	3.92	P<0.05

Table 4. Comparison of incidence rates of adverse reactions between the two groups

Complication	Control group (n=54)	Observation group (n=54)	X^2	P
	Cases (%)	Cases (%)		
Drowsiness	3 (5.56)	1 (1.85)		
Headache	2 (3.70)	2 (3.70)		
Weight loss	1 (1.85)	0 (0)		
Extrapyramidal reactions	3 (5.56)	1 (1.85)		
Irritability	3 (5.56)	1 (1.85)		
Insomnia	2 (3.70)	0 (0)		
Total incidence rate (%)	25.9	9.3	5.17	<0.05

Comparison of treatment efficacies

The treatment efficacy of the control group was 74.1%, while that of the observation group was significantly higher than the control group at 88.9%. (P<0.05, **Table 3**).

Comparison of incidence rates of adverse reactions

The incidence rate of common adverse reactions exhibited in the control group during treatment (drowsiness, headache, weight loss, extrapyramidal reactions, irritability, and insomnia) was 25.9%, while that in the observation group was significantly lower at 9.3%. (P<0.05, **Table 4**).

Discussion

With an increase in the aging population, China has entered the aging society. With the increasing pressure on people's lives, the incidence of SD has gradually increased. The manifestations of SD mainly include memory and cognitive impairments, and patients with SD are often present a series of psycho-behavioral symptoms. The serotonin (5-HT) content inside the brain also shows significant changes; therefore, patients with SD commonly exhibit anxiety, restlessness, mood depression, delusion, illusion, and other symptoms [11, 12]. SD seriously affects patients' quality of life, significantly increases the burden on patients' families, as well as on the health care system. Therefore, treating the psycho-behavioral symptoms of SD has presently become a common concern of neurologists, psychiatrists, and socialists [13, 14]. Regarding the treatment of SD, traditional antipsychotic drugs were widely used initially in clinical practice. Despite their beneficial effects, harmful side effects were also gradually observed. As a new generation of antipsychotic drugs, tiapride (TIA) and risperidone (RIS) have shown advantages in treating SD, by not only significantly improving the treatment outcomes towards SD, but also by reducing the side effects during treatment. Therefore, this new generation of antipsychotic drugs has been gradually adopted in clinical practice [15, 16].

The subjects selected in this study were 108 SD patients treated in the Department of Neurology, the Second Affiliated Hospital of Zhengzhou University and PLA 148 Hospital, and according to different medications, these patients were divided into a control group and an observation group; the control group was treated with RIS, while the observation group was treated with TIA, with the treatment period as 2 months. The main observation indicators included PANSS scores before and after treatment, treatment efficiencies, and incidence rates of adverse reactions. Our results showed that the PANSS score of the observation group was significantly reduced compared with the control group after treatment. The treatment efficiency of the observation group was higher, while the incidence rate of adverse reactions was significantly lower than that of the control group. RIS is a phenyl propyl isoxazole derivative, a new generation of antipsychotic drug, and has high affinity to dopamine D2 receptor. Therefore, it is used as a powerful D2 receptor

antagonist, which significantly improves the symptoms of schizophrenia, and its side effects are lesser than traditional antipsychotics [17, 18]. TIA is a neuropsychiatric tranquilizer that acts by blocking the dopamine receptors at the mesencephalic margin. It has been used for the treatment of mental and motion behavioral disorders, such as SD in the elderly, and its side effects are low [19, 20], thus, significantly improving the treatment outcomes and quality of life of patients with SD. In this study, TIA exhibited better results in terms of treatment efficiency and toxicity compared with RIS.

In summary, TIA and RIS exhibit therapeutic effects in patients with SD, and the comparison revealed that TIA could improve the clinical symptoms of patients with SD, with shorter onset time, higher treatment efficiency, and lower incidence rate of adverse reactions than RIS, and hence, it is worthy of further study.

Disclosure of conflict of interest

None.

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References

[1] Price JL, McKeel DW Jr, Buckles VD, Roe CM, Xiong C, Grundman M, Hansen LA, Petersen RC, Parisi JE, Dickson DW, Smith CD, Davis DG, Schmitt FA, Markesbery WR, Kaye J, Kurlan R, Hulette C, Kurland BF, Higdon R, Kukull W and Morris JC. Neuropathology of nondemented aging: presumptive evidence for preclinical Alzheimer disease. Neurobiol Aging 2009; 30: 1026-1036.

[2] Vieira RT, Caixeta L, Machado S, Silva AC, Nardi AE, Arias-Carrion O and Carta MG. Epidemiology of early-onset dementia: a review of the literature. Clin Pract Epidemiol Ment Health 2013; 9: 88-95.

[3] Reitz C and Mayeux R. Alzheimer disease: epidemiology, diagnostic criteria, risk factors and biomarkers. Biochem Pharmacol 2014; 88: 640-651.

[4] Rossor MN, Fox NC, Mummery CJ, Schott JM and Warren JD. The diagnosis of young-onset dementia. Lancet Neurol 2010; 9: 793-806.

[5] Nelson PT, Alafuzoff I, Bigio EH, Bouras C, Braak H, Cairns NJ, Castellani RJ, Crain BJ, Davies P, Del Tredici K, Duyckaerts C, Frosch MP, Haroutunian V, Hof PR, Hulette CM, Hyman BT, Iwatsubo T, Jellinger KA, Jicha GA, Kovari E, Kukull WA, Leverenz JB, Love S, Mackenzie IR, Mann DM, Masliah E, McKee AC, Montine TJ, Morris JC, Schneider JA, Sonnen JA, Thal DR, Trojanowski JQ, Troncoso JC, Wisniewski T, Woltjer RL and Beach TG. Correlation of Alzheimer disease neuropathologic changes with cognitive status: a review of the literature. J Neuropathol Exp Neurol 2012; 71: 362-381.

[6] Schneider LS, Mangialasche F, Andreasen N, Feldman H, Giacobini E, Jones R, Mantua V, Mecocci P, Pani L, Winblad B and Kivipelto M. Clinical trials and late-stage drug development for Alzheimer's disease: an appraisal from 1984 to 2014. J Intern Med 2014; 275: 251-283.

[7] Hyman BT, Phelps CH, Beach TG, Bigio EH, Cairns NJ, Carrillo MC, Dickson DW, Duyckaerts C, Frosch MP, Masliah E, Mirra SS, Nelson PT, Schneider JA, Thal DR, Thies B, Trojanowski JQ, Vinters HV and Montine TJ. National Institute on Aging-Alzheimer's Association guidelines for the neuropathologic assessment of Alzheimer's disease. Alzheimers Dement 2012; 8: 1-13.

[8] Shen L, Thompson PM, Potkin SG, Bertram L, Farrer LA, Foroud TM, Green RC, Hu X, Huentelman MJ, Kim S, Kauwe JS, Li Q, Liu E, Macciardi F, Moore JH, Munsie L, Nho K, Ramanan VK, Risacher SL, Stone DJ, Swaminathan S, Toga AW, Weiner MW and Saykin AJ. Genetic analysis of quantitative phenotypes in AD and MCI: imaging, cognition and biomarkers. Brain Imaging Behav 2014; 8: 183-207.

[9] Montine TJ, Phelps CH, Beach TG, Bigio EH, Cairns NJ, Dickson DW, Duyckaerts C, Frosch MP, Masliah E, Mirra SS, Nelson PT, Schneider JA, Thal DR, Trojanowski JQ, Vinters HV and Hyman BT. National Institute on Aging-Alzheimer's Association guidelines for the neuropathologic assessment of Alzheimer's disease: a practical approach. Acta Neuropathol 2012; 123: 1-11.

[10] Huybrechts KF, Brookhart MA, Rothman KJ, Silliman RA, Gerhard T, Crystal S and Schneeweiss S. Comparison of different approaches to confounding adjustment in a study on the association of antipsychotic medication with mortality in older nursing home patients. Am J Epidemiol 2011; 174: 1089-1099.

[11] Teng E, Ringman JM, Ross LK, Mulnard RA, Dick MB, Bartzokis G, Davies HD, Galasko D, Hewett L, Mungas D, Reed BR, Schneider LS, Segal-Gidan F, Yaffe K and Cummings JL. Diagnosing depression in Alzheimer disease with the national institute of mental health provi-

sional criteria. Am J Geriatr Psychiatry 2008; 16: 469-477.
[12] Reitz C, Brayne C and Mayeux R. Epidemiology of Alzheimer disease. Nat Rev Neurol 2011; 7: 137-152.
[13] Lesne SE, Sherman MA, Grant M, Kuskowski M, Schneider JA, Bennett DA and Ashe KH. Brain amyloid-beta oligomers in ageing and Alzheimer's disease. Brain 2013; 136: 1383-1398.
[14] Yan H, Li L and Tang XC. Treating senile dementia with traditional Chinese medicine. Clin Interv Aging 2007; 2: 201-208.
[15] Vos SJ, Xiong C, Visser PJ, Jasielec MS, Hassenstab J, Grant EA, Cairns NJ, Morris JC, Holtzman DM and Fagan AM. Preclinical Alzheimer's disease and its outcome: a longitudinal cohort study. Lancet Neurol 2013; 12: 957-965.
[16] Robert P, Ferris S, Gauthier S, Ihl R, Winblad B, Tennigkeit F. Review of Alzheimer's disease scales: is there a need for a new multi-domain scale for therapy evaluation in medical practice? Alzheimers Res Ther 2010; 2: 24.
[17] Ryman DC, Acosta-Baena N, Aisen PS, Bird T, Danek A, Fox NC, Goate A, Frommelt P, Ghetti B, Langbaum JB, Lopera F, Martins R, Masters CL, Mayeux RP, McDade E, Moreno S, Reiman EM, Ringman JM, Salloway S, Schofield PR, Sperling R, Tariot PN, Xiong C, Morris JC and Bateman RJ. Symptom onset in autosomal dominant Alzheimer disease: a systematic review and meta-analysis. Neurology 2014; 83: 253-260.
[18] Devanand DP, Mintzer J, Schultz SK, Andrews HF, Sultzer DL, de la Pena D, Gupta S, Colon S, Schimming C, Pelton GH and Levin B. Relapse risk after discontinuation of risperidone in Alzheimer's disease. N Engl J Med 2012; 367: 1497-1507.
[19] Grossberg GT. Cholinesterase inhibitors for the treatment of Alzheimer's disease: getting on and staying on. Curr Ther Res Clin Exp 2003; 64: 216-235.
[20] Roos RA, Van der Velde EA, Buruma OJ and de Wolff FA. Assessment of the therapeutic range of tiapride in patients with tardive dyskinesia. J Neurol Neurosurg Psychiatry 1986; 49: 1055-1058.