

Receptive Functions at Childbearing Age, Perimenopause and Postmenopause

Semso Rosic¹, Muhamed Rosic², Remzo Samardzic³, Sulejman Kendic⁴

Dispensary for Women's Health, Health Care Center, Cazin, Bosnia and Herzegovina¹

Primary Health Care, Health Care Center, Cazin, Bosnia and Herzegovina²

Internist Consultative Service, Health Care Center, Cazin, Bosnia and Herzegovina³

School of Health Studies, University of Bihac, Bosnia and Herzegovina⁴

Corresponding author: Semso Rosic, MD, PhD. Health center Cazin, Cazin, Bosnia and Herzegovina. E-mail: rosic@gmail.com

ABSTRACT

Introduction: Receptive functions represents higher mental processes by which people carry out normal daily living tasks. The specificity of these functions is that they stimulate specific physiological functions in the body. They are reflected in the ability to select, classify and integrate the information received. **Material and Methods:** We performed an assessment of visual-perceptual abilities by Purdue nonverbal test (PNT-TV) in 135 patients. Patients are classified into three age groups of 45 patients. The first group consisted of patients of childbearing age (25-39 years), second group of patients in perimenopausal age (40-54 years) and a third group of postmenopausal patients (≥ 55 years). **Results:** The distribution of the results are statistically different between groups, suggesting that at the onset of menopause there is a decrease of visual-perceptual abilities in patients (Friedman test was significant with $p < 0.001$). **Conclusion:** By the distribution of the results of our study, and the statistical significance of Friedman's, it can be concluded that patients who enter menopause have tendency to decrease of receptive functions.

Key words: receptive functions, fertile age, perimenopause and postmenopause.

1. INTRODUCTION

Receptive functions are higher mental processes by which people carry out normal daily life tasks (1). The specificity of these functions is that they stimulate specific physiological functions in the body. They are reflected in the ability to select, classify and integrate received informations (2).

At the cellular level receptive functions depend primarily on communication between neurons, or the activity of specific signaling molecules called neurotransmitters. Studies show that estrogen directly, through intracellular receptors (genomic) and membrane receptors (non genomic), act on neurotransmitters and receptors and alter the level of neurohormones compensation. Estrogens prevent decline in cognitive function by modeling blood flow and activity in key brain areas, including the area responsible for attention as well as verbal and spatial memory (3).

As the estrogen level decreases with age, so does the level of neurotransmitters in the key areas of the brain, which can affect the receptive functions. In our study, we measured the visual-perceptual ability in patients of childbearing age, perimenopausal and postmenopausal women, which means the ability of visual perception of space and elements of space, spatial relationships and the ability to perform thought-perceptive organization of the observed elements (4).

According to the results of the study, these receptive functions are an important factor that predisposes the quality of life in older age.

2. GOAL

The goals of this study were to assess the visual-perceptual abilities of female patients of childbearing age, perimenopausal and postmenopausal.

3. MATERIAL AND METHODS

We used stratified sample of 135 respondents. The baseline sample was divided into three groups. The first group consisted of patients of childbearing age (25-39 years). The second group consisted of patients in perimenopausal age (40-54 years). The third group consisted of female patients in postmenopausal age (≥ 55 years). The survey was conducted as part of regular medical examinations of the patients. Measurement of receptive functions was performed using the Purdue nonverbal test (PNT).

PNT has standardized norms for certain age groups. Unweighted scores, that respondents achieved on PNT are evaluated according to norms for specific age group used in the PNT standardization (5). Solving of the test lasted for 25 minutes. The total score is the sum of correct solutions.

For every age group of women is made the distribution of results. At the end by the Friedman's test are tested the distribution of results of all three groups of respondents.

4. RESULTS

The results are presented in tables and figures.

Groups (age)	N	Mean	Std. Deviation	Mini- mum	Maxi- mum
Childbearing age (25-39)	45	26.00	6.026	15	37
Perimenopausal age (40-54)	45	21.00	5.398	9	33
Postmenopausal age (≥55)	45	16.09	3.872	7	24

Table 1. Descriptive Statistics

Groups (age)	Mean Rank
Childbearing age (25-39)	2.68
Perimenopausal age (40-54)	1.99
Postmenopausal age (≥55)	1.33

Table 2. Ranks

N	45
Chi-Square	42.570
Df	2
Asymp. Sig.	.000
a. Friedman Test	

Table 3. Test Statistics

Friedman’s test indicates that the distribution of results significantly differ between groups, suggesting that at the onset of menopause there is a decrease in visual-perceptual abilities of the patients.

Figure 1 presents the average values of achieved scores at the PNT for all three age groups. Results in patients of childbearing age, perimenopausal and postmenopausal age are significantly different, Friedman’s test was significant with $p < 0.001$.

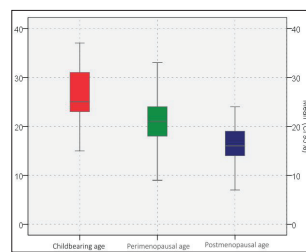


Figure 1. Distribution of PNT scores

5. DISCUSSION

In a Seattle Midlife Women’s Health Study, 62% of women complained of memory and concentration difficulties in menopause, resulting in daily problems in behavior and ability to deal with them (5). Yaffe (1998) has found that postmenopausal women with higher concentrations of unbound estrogen are less prone to decline of cognitive functions (6). With the help of Mini -Mental Status Examination (MMSE) test, 425 women aged 65 years or older were studied during six years. Also measured are concentrations of bioavailable estradiol and testosterone, unbound to proteins in the blood with comparison of their levels of estrogen. Women with higher concentrations of free estradiol had a 70% lower risk for decline in cognitive function than women with a low concentration of free estradiol. This suggests that the estrogen should be able to cross the blood–brain barrier in order to have a beneficial effect. Since some progestogens facilitate the ability of free estrogen to cross the blood- brain barrier, a combined preparations of HRT may be the most effective in preventing cognitive deterioration (7). LeBlanc and colleagues in the comprehensive meta-analysis and systematic review gathered data from 29 studies exploring the use of HRT in dementia prevention (8). The researchers concluded that women with menopausal symptoms, which used HRT, had improvements in verbal memory, alertness, judgment, and the motor speed. McEwen and colleagues in their study also suggest that HRT may prevent deterioration of cognitive functions related to aging, while estrogen supple-

ment may protect the hippocampus and other brain areas associated with dementia (9). Weight of data from randomized, controlled studies in the region on estrogen and cognition in postmenopausal women speaks how estrogen protects verbal memory, while less consistent observational studies showing a greater diversity of their impact.

With the worldwide growth of elderly population, raising are concerns about the devastating effects of Alzheimer’s dementia (AD). Observational studies have suggested that estrogens may delay or prevent the onset of AD if treatment is begun in the early period of menopause. Tang and colleagues studied 1124 older women, mean age 74.2 years, searching for cognitive impairment over five years. They concluded that the occurrence of AD was significantly later in women taking estrogen than in those who did not (10). Relative risk for AD was six percent lower in women receiving HRT and sixteen percent higher in women who had not use it. In women who used estrogen for more than a year reduction in the risk of disease was greatest. Barbara Sherwin concludes that, given the evidence collected, there may be a critical “window” of time to initiate treatment with estrogens, immediately upon the occurrence of perimenopause, which can increase their maximum potential against cognition deterioration (11). Early commencement and with the lowest effective dose of women may have a protective effect of estrogen with a very low risk of treatment.

6. CONCLUSIONS

According to the distribution of results in our study, and the statistical significance of Friedman-test, it can be concluded that in patients who enter menopause exist a tend toward decrease of receptive functions. Given the evidence collected, there is a critical “window” in time for receptive function decrease prevention. Immediately upon the occurrence of perimenopause, estrogen use may increase their maximum potential in the fight against the deterioration of these functions. By early application of the minimum effective dose of estrogen, women may have a protective effect, with a very low risk of treatment.

CONFLICT OF INTEREST: NONE DECLARED

REFERENCES

- Rapp SR, et al. Effect of Estrogen Plus Progestin on Global Cognitive Function in Postmenopausal Women. JAMA. 2003; 289: 2663-2672.
- Shaywitz SE, et al. Effect of Estrogen on Brain Activation Patterns in Postmenopausal Women During Working Memory Tasks. JAMA. 1999; 281: 1197-1202.
- Mitchell ES, Woods NF. Midlife Women’s Attributions About Perceived Memory Changes: Observations from the Seattle Midlife Women’s Health Study. J Women’s Health Gen Based Med. 2001; 10: 351-362.
- Resnick SM, Maki PM. Effects of Hormone Replacement Therapy on Cognitive an Brain Aging. Ann NY Academy Sciences. 2001; 949: 203-214.
- Maki PM, et al. Enhanced Verbal Memory in Nondemented Elderly Women Receiving Hormone Replacement Therapy. Am J Psychiatry. 2001; 159: 227-233.
- Yaffe K, et al. Estrogen Therapy in Postmenopausal Women: Effect on Cognitive function and Dementia. JAMA. 1998; 279: 668-695.
- Hajder M, Hajder E, Dervisevendic M, Samardzic R, Alic E. Prolactinomas in Infertile Women: Clinical and Endocrine Characteristics Before and After 24 Months. Med Ar. 2013 Mar; 67(3): 181-184. doi: 10.5455/med-arh.2013.67.181-184.
- LeBlanc ES, et al. Hormone Replacement Therapy and Cognition: Systematic Review and Meta-analysis. JAMA. 2001; 285: 1489-1499.
- McEwen BS, et al. Ovarian Steroids and the Brain: Implications for Cognition and Aging. Neurology. 1997; 48: S8-S15.
- Tang MX, et al. Effect of Oestrogen During Menopause on Risk and Age at Onset of Alzheimer’s Disease. Lancet. 1996; 348: 429-432.
- Izetbegovic S, Stojkanovic G, Ribic N, Mehmedbasic E. Features of Postmenopausal Uterine Haemorrhage. Med Arh. 2013 Dec; 67(6): 431-434.