Gdańska Paulina, Kiersnowska Iwona, Baranowska Joanna, Kotomska Marta, Węgrzyn Piotr. Bright light therapy as a method of supportive treatment of depression in pregnancy, puerperium and other selected psychiatric diseases. Journal of Education, Health and Sport. 2019;9(5):304-309. eISSN 2391-8306. DOI http://dx.doi.org/10.5281/zenodo.3157429
http://ojs.ukw.edu.pl/index.php/johs/article/view/6928

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part B item 1223 (26/01/2017).
1223 Journal of Education, Health and Sport eISSN 2391-8306 7

The authors declare that there is no conflict of interests regarding the publication of this paper.

Received: 28.04.2019. Revised: 28.04.2019. Accepted: 22.05.2019.

Bright light therapy as a method of supportive treatment of depression in pregnancy, puerperium and other selected psychiatric diseases

Paulina Gdańska[1], Iwona Kiersnowska[1], Joanna Baranowska[2], Marta Kotomska[3], Piotr Węgrzyn[1]

[1] Department of Obstetrics and Perinatology, Medical University of Warsaw, Warsaw, Poland
[2] Midwifery student, Faculty of Health Sciences, Medical University Of Warsaw, Poland
[3] Department of Basics of Nursing, Medical University of Warsaw, Warsaw, Poland

Abstract:

The paper presents the role of phototherapy in treatment of depression in pregnancy, puerperium and other selected psychiatric diseases. Bright light therapy can be used as an independent form of treatment or as a method supplementing pharmacotherapy. The treatment is based on the use of light that mimics natural sunlight during light therapy sessions. Phototherapy is an optimal solution when treating depressive moods, especially seasonal depression associated with deficiency of sunlight. In the autumn-winter season the production of serotonin responsible for the proper functioning of the nervous system and general well-being, is physiologically reduced. Therefore, the use of light seems to be a reasonable treatment for depressive moods. Light therapy was also adopted in the treatment of schizophrenia, post-stroke depression and eating disorders. This method is characterized by high safety profile, a small number of mild side effects and a simple treatment scheme. In view of the above, it is a convenient method to be used in clinical conditions.

Keywords: Light therapy , Phototherapy, Depression, Perinatal depression

Introduction

Phototherapy (bright light therapy) is one of the non-pharmacological methods of treatment used in psychiatry. It involves the use of light that mimics natural sunlight during light therapy sessions. Rosenthal first introduced it in the 1980s as one of the treatments for seasonal depression [1]. Seasonal depression is a disorder in which episodes of deteriorated mood occur in autumn-winter period. Ultraviolet light causes secretion of melatonin prohormone - serotonin, which, as a neurotransmitter, has a direct effect on mood, sleep, sexual impulsive behavior and appetite. The lack of natural light in the autumn-winter season largely contributes to the distortion the sleep and wakefulness rhythm, which in turn causes depressive symptoms by increasing the levels of melatonin. That is why the idea appeared of using light that mimics natural sunlight in the treatment of symptoms of depression [2,3].

The first phototherapy laboratory in Poland was established in 1991 at the Institute of Psychiatry and Neurology by Łukasz Święcicki, polish doctor, specialist in psychiatry. Numerous scientific studies have confirmed the efficacy and safety of phototherapy in the treatment of depressive disorders [4].

Research is currently being conducted on the application of phototherapy in the treatment of other mental diseases and disorders such as bipolar affective disorder, schizophrenia, eating disorders, depression in cancer patients or depression during pregnancy and after childbirth. Preliminary results are positive, pointing to promising possibilities in the treatment of depression of different origin [5].

Description of the method

Phototherapy uses white light with a broad spectrum. To obtain the desired effect the lamp must be placed at eye level and emit light of a suitable brightness, most frequently of 5000-10000 lux. The duration of a session depends on the brightness of the emitted light, for example for the light of 10000 lux the session lasts 30 minutes. To achieve effective depression treatment the appropriate light intensity and exposure time are required. The usual course of treatment involves several sessions taken every 1-2 days for the minimal duration of two weeks, with the optimal duration of the therapy lasting a few weeks [2, 4].

Light therapy is used as a standalone treatment or it can support pharmacological therapy. It is safe and well tolerated by patients, provided that appropriate light sources with filters absorbing harmful ultraviolet radiation are used [2].

Side effects and precautions

Research, including the one carried out in Poland [3], showed that phototherapy is usually well tolerated by patients. Side effects are usually mild and appear in approx. 30% of the cases [6]. The most common include headache, dizziness, nausea, blurred vision, eyestrain and watery eyes which usually persist for a few days and pass without any major complications.

The treatment is not recommended for patients who take medications causing photosensitization, such as some antibiotics, antipsychotics, and herbal preparations containing St. John's wort. The consultation before starting the treatment should also take into account retinal diseases and the presence of migraines. It should also be noted that the use of phototherapy in patients suffering from bipolar affective disorder carries a higher risk of the phase change from depressive into maniac [2].

Low cost of the therapy, favorable safety profile and simple treatment regimen encourage ongoing research on the applicability of phototherapy in various forms of depression and other mental disorders.

The aim of the study

The aim of the study is to review the current state of knowledge about the use of phototherapy in clinical practice, taking into account the indications, efficacy and safety of this method of treatment.

Current state of knowledge

Seasonal Affective Disorder

Since the prevalence of this type of depression increases with the increasing geographical latitude, it has been speculated that lower exposure to sunlight during autumn and winter months may contribute to the rise of seasonal depression. In this case, bright light therapy is recommended as a treatment of choice. Lack of natural light deregulates the circadian sleep-wake rhythm and bringing it back to its regular pace results in a significant improvement in the functioning of patients in the autumn-winter period [4, 7].

Circadian rhythm abnormalities

Researchers are also interested in the use of light therapy as a supportive therapy to alleviate the effects of circadian rhythm abnormalities resulting from other medical conditions or intensive treatment. After phototherapy both women treated for breast cancer and patients with Alzheimer's disease have reported a marked improvement. Differences in the use of light therapy in these two groups of patients concerned the time of day – morning sessions for reducing the effects of chemotherapy and evening sessions using pulse light in Alzheimer's disease [7, 8].

Depression in pregnancy and puerperium

Pregnancy is generally considered to be the state of specific mental welfare. However, the latest research and clinical practice clearly indicate the wrongs of this belief. In fact, high levels of anxiety are experienced by almost 60% of women in the third trimester of pregnancy [9]. As shown in scientific reports, currently depressive symptoms affect almost 20% of pregnant women [10]. The Ministry of Health took these disturbing reports very seriously, which resulted in including three obligatory checks of mental state of pregnant patients in the Organizational Standards of Perinatal Care. The first assessment of the risk of depressive symptoms and their possible exacerbation is supposed take place between the 11^{th} and 14^{th} week of pregnancy, the second one between the 33^{rd} and 37^{th} week of pregnancy and last after giving birth [11]. Pregnant patients who demonstrated symptoms of a mental illness show an increased risk of developing a postpartum psychosis. Depressive episodes during pregnancy may contribute to the occurrence of premature births, which, in turn, results in prematurity and low birth weight of infants [12].

Depression occurring during the pregnancy and after the childbirth is undoubtedly a very important issue. Along with the growing number of pregnant patients diagnosed with mental illnesses comes an increasing need for determining effective methods of treatment.

The use of pharmacotherapy during pregnancy is limited due to the trans-placental transmission of antidepressants into the systemic circulation of the fetus. After labor the risk associated with the presence of the drug in the milk of breastfeeding mothers, must be taken into account. Little research has been carried out in this area, and in most cases the problem was associated with a small size of the study group and also ethical considerations [13, 14]. Limitation in the study resulted from the lack of observations concerning the reduction of fears, sleep problems or fatigue [14].

Recent studies on pregnant women show that the light therapy alone, without psychotherapy and pharmacotherapy, brings very good results for mothers. No unwanted side effects such as premature birth, low birth weight and sudden infant death syndrome have been recorded.

There are many scientific reports confirming the appropriateness of using electroconvulsive therapy in severe depressive states. This method provokes, however, a lot of controversy and therefore is relatively rarely used.

Possible application of phototherapy in pregnant women and women in the postnatal period is currently being assessed. Due to the specific nature of this period and a broad spectrum of

complications, non-invasive, safe, affordable and available therapies for the treatment of depressive disorders are continuously being sought.

Recent studies on pregnant women show that the light therapy alone, without psychotherapy and pharmacotherapy, brings very good results for mothers. No unwanted side effects such as premature birth, low birth weight and sudden infant death syndrome have been recorded. However, such situations are characteristic for the perinatal period in women with severe untreated depression [15].

Eating disorders

Phototherapy is also used as a method of treatment of eating disorders in women. The effectiveness of phototherapy was examined in a study performed on a group of 24 female patients with anorexia and coexisting depression. Half of these patients in addition to the cognitive behavioral therapy were also subjected to phototherapy for 6 weeks (10000 lux for 30 min). This group of patients demonstrated improvement in terms of a reduction in depressive symptoms unlike the group, which did not undergo phototherapy. There was however no significant difference in the increase of BMI between these both groups of patients [16].

In another study on a group of patients with seasonal depression and coexisting bulimia, light therapy has also brought a significant improvement in mood. It has also been observed that the number of episodes of binge eating and self-induced vomiting decreased by 46% and 36% respectively. Two patients (9%) no longer experienced any episodes of binge eating and self-induced vomiting, and 10 patients (45%) achieved remission of depressive symptoms [17].

The existing results concerning the use of phototherapy in patients with eating disorders suggest that light therapy can be beneficial as a supportive therapy, but there is not enough data to recommend applying it as a first-line treatment [17, 18].

Depression in children

Treatment of childhood and adolescent depression differs significantly from the treatment of depression in adults and one of the reasons may be immaturity of serotonergic and noradrenergic systems. Some of the drugs successfully used in the treatment of adults do not bring improvement in young patients [18]. A study carried out in 1990s in children with depression aged 7 to 17 years, showed the effectiveness of light therapy for mood improved in both children and their parents [19].

Depression in older adults

Elderly people have an increased risk of the occurrence of depressive moods, which can exacerbate the course of their other diseases. The concomitant high intake of drugs by these patients focuses attention on the use of light therapy as a prevention of polypharmacy (the simultaneous use of multiple medications). Light therapy patients (the residents of a long-term care centre) underwent the treatment every day for 4 weeks and it resulted in a marked improvement in their mental state as well as in the cognitive processes, sleep and circadian rhythms [20].

Post-stroke depression

Post-stroke depression, experienced by approximately 30% of patients, affects the rehabilitation, which, as a result takes longer and is less effective. Citalopram therapy for depression was supported with light therapy. After 4 weeks of treatment the outcome measured using the Hamilton Depression Rating Scale confirmed a better improvement of treatment results in the group of patients using high-intensity light in comparison to the group under medium-intensity light therapy. Particularly significant improvement was observed among elderly patients [21].

Schizophrenia

Encouraging results of the use of phototherapy in the treatment of depression led the researchers to look for the possible use of phototherapy in the treatment of the negative

symptoms and the coexisting depressive symptoms in schizophrenia. In one of the studies the improvement in terms of the reduction of the intensity of the negative symptoms has been confirmed in 10 patients with schizophrenia [22], however in another study the benefits of phototherapy in patients with schizophrenia have not found confirmation [23].

Other diseases

One of the studies showed an improvement in the mental state after applying phototherapy in patients undergoing rehabilitation for movement disorders. The aim of the study was to assess the effect of phototherapy in patients with symptoms of depression hospitalized in the ward for rehabilitation of orthopedic and neurological diseases. The patients were treated with kinesiotherapy and physiotherapy and additionally, for the purpose of the study, their faces were exposed to polarized light every day for 30 min during hospitalization. When the therapy finished the degree of depression severity was assessed using the Patients Health Questionnaire (PHQ-9). Lower degree of depression severity in the questionnaire was achieved in 93% of patients. The highest effectiveness of phototherapy was achieved in women with degenerative changes, and it proved least effective in a group of men diagnosed with a neurological disease [24].

The summary

The studies carried out to date support the effectiveness of phototherapy in the treatment of seasonal depression and it is the currently used treatment of choice for this disease. Promising research results suggest the usefulness of this method of treatment in women with depression during pregnancy and after childbirth. However, there is still not enough data from large randomized studies to recommend this method as a first-line treatment. Phototherapy may also be used as a complementary therapy to the primary treatment of depression, which accompanies other diseases and mental disorders such as bipolar affective disorder, schizophrenia, eating disorders and post-stroke depression.

References:

1. Rosenthal NE, Sack DA, Gillin C, et al. Seasonal affective disorder. A description of the syndrome and preliminary findings with light therapy. Arch Gen Psychiatr 1984, 41:72-80.
2. Jośko-Ochojska J, Oleszko A. Wykorzystanie fototerapii w praktyce klinicznej. Probl Hig Epidemiol. 2013;94(4):718-21.
3. Krzystanek M., Krupka-Matuszczyk I., Bargiel-Matusiewicz K., Obserwacje dotyczące tolerancji leczenia światłem widzialnym w psychiatrii. Psychiatria Polska. 2005; 39(3),449-458.
4. Chojnacka M, Święcicki Ł. Ocena skuteczności fototerapii w leczeniu nie sezonowych zaburzeń afektywnych. Postępy Psychiatrii i Neurologii. 2011;20(1):45 - 51.
5. Al-Karawi D, Jubair L. Bright light therapy for nonseasonal depression: meta-analysis of clinical trials. Journal of affective disorders. 2016;198:64-71.
6. Terman M., Terman J.S. Bright light therapy: side effects and benefits across the symptom spectrum. J Clin Psychiatry. 1999;60(11): 799-809
7. Neikrug AB, Rissling M, Trofimenko V, Liu L, Natarajan L, Lawton S, et al. Bright light therapy protects women from circadian rhythm desynchronization during chemotherapy for breast cancer. Behavioral sleep medicine. 2012;10(3):202-16.
8. Satlin A, Volicer L, Ross V, Herz L, Campbell S. Bright light treatment of behavioral and sleep disturbances. American Journal of Psychiatry. 1992;149(8):1028.

9. Branecka-Woźniak D. Ocena poziomu lęku u kobiet ciężarnych w kontekście wpływu uwarunkowań biologicznych, medycznych oraz środowiskowo-społecznych. Pomeranian Journal of Life Sciences, 2015, 61.4.
10. O'hara MW, McCabe JE. Postpartum depression: current status and future directions. Annual review of clinical psychology, 2013, 9: 379-407.
11. Rozporządzenie Ministra Zdrowia z dnia 16 sierpnia 2018 r. w sprawie standardu organizacyjnego opieki okołoporodowej, Dziennik Ustaw Rzeczypospolitej Polskiej z dnia 11 września 2018 r. poz. 1756.
12. Grigoriadis, S, VonderPorten, EH, Mamisashvili, L. The impact of maternal depression during pregnancy on perinatal outcomes: A systematic review and meta-analysis. Journal of Clinical Psychiatry. 2013, 74: e321–e341.
13. Krzystanek M, Krupka-Matuszczyk I. Leczenie swiatlem widzialnym depresji u kobiet w ciazy-studium 3 przypadkow. Psychiatria Polska. 2006;40(2):261.
14. Crowley SK, Youngstedt SD. Efficacy of light therapy for perinatal depression: a review. Journal of physiological anthropology. 2012;31(1):15-.
15. Bais B, Kamperman AM, van der Zwaag MD, Dieleman GC, van der Vliet HWH, Bijma HH,et al. Bright light therapy in pregnant women with major depressive disorder: study protocol for a randomized, double-blind, controlled clinical trial. BMC psychiatry. 2016;16(1):381.
16. Janas-Kozik M, Krzystanek M, Stachowicz M, Krupka-Matuszczyk I, Janas A, Rybakowski JK. Bright light treatment of depressive symptoms in patients with restrictive type of anorexia nervosa. Journal of affective disorders. 2011;130(3):462-5.
17. Lam RW, Lee SK, Tam EM, Grewal A, Yatham LN. An open trial of light therapy for women with seasonal affective disorder and comorbid bulimia nervosa. The Journal of clinical psychiatry. 2001;62(3):164-8.
18. Krysta K, Krzystanek M, Janas-Kozik M, Krupka-Matuszczyk I. Bright light therapy in the treatment of childhood and adolescence depression, antepartum depression, and eating disorders. Journal of Neural Transmission. 2012;119(10):1167-72.
19. Swedo SE, Allen AJ, Glod CA, Clark CH, Teicher MH, Richter D, et al. A controlled trial of light therapy for the treatment of pediatric seasonal affective disorder.
20. Royer M, Ballentine NH, Eslinger PJ, Houser K, Mistrick R, Behr R, et al. Light therapy for seniors in long term care. Journal of the American Medical Directors Association. 2012;13(2):100-2.
21. Søndergaard M, Jarden J, Martiny K, Andersen G, Bech P. Dose response to adjunctive light therapy in citalopram-treated patients with post-stroke depression. Psychotherapy and psychosomatics. 2006;75(4):244-8.
22. Aichhorn, W., Stelzig-Schoeler, R., Geretsegger, C., Stuppaeck, C., & Kemmler, G. Bright light therapy for negative symptoms in schizophrenia: a pilot study. *The Journal of clinical psychiatry*, 2007 *68*(7), 1146.
23. Roopram SM, Burger AM, van Dijk DA, Enterman J, Haffmans J. A pilot study of bright light therapy in schizophrenia. Psychiatry research. 2016;245:317-20.
24. Paprocka-Borowicz M., Trafalska A., Borowicz W.A., Wpływ fototerapii na ograniczenie objawów depresji u pacjentów rehabilitowanych z powodu zaburzeń narządu ruchu. Pielęgniarstwo i Zdrowie Publiczne. 2015; 5(2), 121-130 .