



Is trichotillomania a disorder of the obsessive-compulsive spectrum? A case report

Czy trichotillomania jest zaburzeniem ze spektrum obsesyjno-kompulsyjnego? – opis przypadku^{1*}

AGATA NOWACKA, ANTONI FLORKOWSKI, MARTA BRONIARCZYK-CZARNIAK,
JOANNA ŁACISZ, AGATA ORZECZOWSKA

Klinika Psychiatrii Dorosłych Uniwersytetu Medycznego w Łodzi

ABSTRACT

Objectives. According to current classifications trichotillomania (TTM) is a psychiatric disorder characterized by hair loss due to uncontrolled, impulsive hair pulling. The aim of this paper is to estimate the validity of reassigning trichotillomania to a group of obsessive-compulsive disorders.

Case report. The case report presents a patient suffering from trichotillomania with concomitant trichophagia. She underwent, in a clinical setting, a course of treatment with lithium and a TCA as well as clomipramine, which produced partial improvement.

Commentary. It is not only symptomatology and clinical course but also neurobiological and genetic background that mark the distinction between trichotillomania and obsessive-compulsive disorders, which in the clinical setting implies distinct therapies and different rate of treatment responders.

STRESZCZENIE

Cel. Według obowiązujących klasyfikacji trichotillomania (TTM) jest zaburzeniem psychicznym charakteryzującym się utratą włosów spowodowaną niekontrolowanym, impulsywnym ich wrywaniem. Celem tego opracowania jest ocena zasadności reklasyfikacji trichotillomanii w piątej edycji DSM do grupy zaburzeń obsesyjno-kompulsyjnych.

Przypadek. Opis dotyczy pacjentki cierpiącej na trichotillomanię z towarzyszącą trichofagią. Pacjentka została poddana terapii z zastosowaniem soli litu oraz klomipraminy co przyniosło częściową poprawę w zakresie przejawianych objawów.

Komentarz. Nie tylko symptomatologia i przebieg kliniczny, ale również tło neurobiologiczne i genetyczne odróżniają trichotillomanię od zaburzeń obsesyjno-kompulsyjnych, co w praktyce klinicznej przekłada się na odmienne formy terapii i różny stopień odpowiedzi na prowadzone leczenie.

Key words: trichotillomania / obsessive-compulsive disorder / obsessive-compulsive spectrum

Słowa kluczowe: trichotillomania / zaburzenia obsesyjno-kompulsyjne / spektrum zaburzeń obsesyjno-kompulsyjnych

According to the ICD-10 classification trichotillomania (TTM) (F63.3) is a psychiatric disorder characterized by a marked hair loss, caused by uncontrolled, impulsive hair pulling. It has been classified into a group of habit and impulse disorders, along with pathological gambling, pyromania and kleptomania. Trichotillomania is classified in a similar way in the DSM-IV TR and its diagnosis requires the presence of the following symptoms:

(A) recurrent hair pulling, which results in noticeable hair loss,

(B) increasing sense of tension immediately before hair pulling episode or when resisting it

(C) experiencing pleasure, satisfaction or relief when pulling hair,

(D) Hair pulling which cannot be attributed to other psychiatric disorders, and

(E) significant distress experienced by the patient or impaired social, professional functioning or in other important areas

These criteria have not been changed in any significant way in the recent fifth edition of the DSM

¹ The study has been financed from a grant of the Medical University of Lodz, No: 502-03/5-062-02/502-54-123; 502-03/5-062-02/502-54-105.

* Artykuł w języku polskim dostępny w wersji elektronicznej (ppn.ipin.edu.pl).

classification, but trichotillomania was shifted into the group of obsessive-compulsive and related disorders, and its name was changed to 'hair pulling disorder'.

It is estimated that the TTM problem refers to 1-3% of general population [1, 2] and has even greater prevalence among persons under 18 years of age [3]. In most patients, the first symptoms of TTM appear in early adolescence [4]. In clinical practice, the vast majority of patients are women (up to 90%) [5, 6]. However, this does not necessarily mean that women are more likely than men to suffer from trichotillomania. It is believed that in the case of men, it is simply easier to hide the hair loss as TTM resembles alopecia areata, and male patients suffering from TTM may tend to shave the areas where they pull their hair, such as their head. The most common place of hair pulling is the scalp, although it may affect virtually every other area of the body (eyebrows, eyelashes, beard, armpit or pubic hair). For patients with trichotillomania it often takes several hours a day to pull their hair. They seldom admit that they manipulate their hair, try to hide the lesions and avoid doctor visits. Hair pulling is often accompanied by rituals, such as scratching the scalp, selecting hair to pull, curling hair, hair shredding or storing it, and a significant percentage of patients put plucked hairs into their mouth and some swallow it (trichophagia). In extreme cases of a small percentage of patients, TTM can lead to the formation of bezoars in the gastrointestinal tract. (trichobezoars) [7], which in the absence of appropriate treatment can be a life-threatening condition (gastrointestinal perforation, obstruction). Among other TTM complications are changes of cosmetic nature, such as skin damage and scarring.

Much more of a problem than the medical complications of TTM are psychological problems and psychiatric comorbidity, increasing with the duration of the illness, with such conditions as anxiety disorders, mood disorders, social phobias and personality disorders. Patients report problems in many areas of functioning in the form of: (1) avoidance of social interactions (2) avoidance of interpersonal relationships (3) problems in carrying out professional responsibilities, (4) family problems [6, 8]. The severity of trichotillomania usually increases in stressful situations, although it also occurs while relaxing (reading books, watching TV.) [9, 10]. Psychological studies have shown that what may underlie the disorder is a conflict between aims, activities, independence and a sense of having to defer to a home or school situation. People suffering from this disorder are seen as nervous, re-

bellious, conflictive, outwardly or auto-aggressive. They usually have limited social life due to illness-related adverse changes in their social situation.

In the pharmacological treatment serotonergic drugs are used, namely SSRIs [11, 12] SNRIs [13] and clomipramine [14], although Bloch [15] on the basis of the available literature highlighted the fact that SSRIs' efficacy in the treatment of TTM seldom outweighs placebo. Clomipramine proved to be more effective than placebo in reducing symptoms of trichotillomania, but a large number of side effects made it a second-line treatment. Naltrexone, an opioid receptor antagonist, has been recently tested with some success in symptom reduction, as demonstrated in the studies involving TTM patients [16]. Another drug effective in the treatment of trichotillomania is synthetic cannabinoid, dronabinol, though the study involved only a small sample of TTM cases [17]. There are also some studies evaluating the effectiveness of drugs modulating dopaminergic transmission, such as bupropion [18] aripiprazole [19, 20], quetiapine [21, 22] olanzapine [23, 24], risperidone [25, 26], haloperidol [27] and pimozide [28]. A promising therapeutic measure seem to be the substances that affect glutamate neurotransmission in the nucleus accumbens, e.g. N-acetylcysteine [29, 30] and riluzole [31]. In trichotillomania, parallel to other impulse control disorders, mood stabilizers such as valproic acid [32] and topiramate [33] have also been used. Relatively good results have been obtained by lithium therapy [34].

CASE REPORT

Ms Z., a 43-year-old patient has turned up at the psychiatrist's office, in March 2012, after a longer break, complaining of not being able to control the involuntary hair pulling from her head.

Interview. Until that time she had been treated in various outpatient mental health clinics, diagnosed with mood disorder, but with little effect, which often led to arbitrary withdrawal of medication and cessation of therapy. She was initially treated with escitalopram, at a dose of 10 mg/day. After several months her medication was changed to clomipramine, which Ms Z. took for a short time and possibly in a small dose of 75 mg/day. She wore a wig to the visit, because her hair was sparse and very short. According to the patient, she was no longer able to pull it as a result of the episode of intense hair pulling a few weeks earlier (Ill. 1, 2). After a lon-



ger conversation, the patient also admitted that she swallowed the plucked hair, stating that she did so impulsively and could not give reasons for her behaviour. She told the psychiatrist that she was delivered at term, by forces of nature, without perinatal complications and her early childhood development was uneventful. She grew up in a complete family, with an older brother, and remembered her childhood and family relationships as good. She was educated to the level of secondary education, never experienced learning or social problems at school. After graduation from the secondary school she took a job as an accountant and worked for one employer who dismissed her while she was undergoing psychiatric treatment. To date, she had no other health complaints, she received no treatment for any other chronic conditions and, to the best of her knowledge, there was no history of mental illness in her family. Her reinstated outpatient treatment involved an initial dose of venlafaxine 75 mg/day, which was gradually increased to 225 mg/day. After a few weeks, she reported a slight improvement in the frequency of hair pulling and amount of plucked hair, but, shortly afterwards, she noted recurrence of symptoms in the severity similar to the pre-treatment period. After 3 months of venlafaxine treatment, olanzapine at a dose of 5mg/day was added, with the primary objective of potentializing treatment, and improvement of sleep disturbances, which the patient complained of for some time. The only positive effect of olanzapine, according to the patient, was the weight gain, which she had found hard to achieve for some time, but there was no clinical improvement of the primary disease. In the meantime it was suggested that the

patient took advantage of cognitive-behavioural therapy, but she rejected the proposal. In the absence of clinical improvement on the outpatient basis, the patient was encouraged to continue with the diagnosis and treatment in the inpatient conditions. The patient reported in the hospital within the prescribed period in early 2013.

Additional tests revealed iron deficiency anaemia. The image of the two-phase computed tomography revealed sections of slight cortical atrophy in fronto-temporal area. Physical examination revealed resistance in the upper abdomen, and the increased tension of the abdominal wall; and abdominal ultrasound report included slight echoes in communication with the mucous membrane of the stomach. The EEG, TSH, FT3, FT4, routine biochemical tests and urinalysis revealed no abnormalities.

Mental status examination on admission: Alert, fully oriented, with slightly depressed mood and marked psychomotorretardation, well-modulated affect and considerable agitation. She spoke in a hushed voice, her speech was interrupted by crying. Her thought process was logical and goal directed, she denied any psychotic symptoms. When asked, she denied ideation and/or suicidal tendencies. In the Hamilton Depression Rating Scale (HDRS) she scored 12 points (mild depressive symptoms). On the obsessive-compulsive symptoms scale (Y-BOCS) she scored 9 points (16 is considered to be the cutoff point for obsessive-compulsive disorder), 2 points each in questions 6, 7, 9, 10, and one point in question 8.

Psychological evaluation. The examination was carried out to assess the patient's personality and cognitive functioning. The evaluation is based upon

the following clinical methods and psychometric tests (standard and experimental clinical trials): conversation, interview and observation, personality questionnaire MMPI-2, Łuria's learning curve, trail making test, Stroop test, Łucki's verbal fluency test, Rey-Osterrieth Complex Figure Test and the Sentence Completion Test by Sacks and Sidney. During the interview, the patient was calm, answered the questions logically and comprehensively. She revealed the attitude of anxiety and withdrawal, and lowered motivation to work after experiencing failure.

The patient achieved the following results:

1. The Minnesota Multiphasic Personality Inventory (MMPI), validity scales indicated an honest attitude towards the study, with no tendency for simulation/dissimulation. Profile code: 2 "07"138-54/96: Dominating scales: Depression, Social Introversion, Psychasthenia. The results indicated mainly the following: low mood, worrying, tension, anxiety, low self-esteem, shyness, tendency for social withdrawal, frequent feelings of guilt, tendency for experiencing nervousness and irritability, difficulty with directly expressing negative emotions, excessive preoccupation with her own thoughts and analysis of her own well-being, long-term experience of insecurity and fear of future, limited ability to adopt a firm attitude in interpersonal relationships, difficulty making decisions and also feeling of helplessness when solving problems.
2. The Rey-Osterrieth Figure Test (copy-34 points, reproduction-19.5points): maintained average level of perceptual structuring; immediate visual memory capacity on borderline of norm and pathology.
3. Auditory-Verbal Learning Test by Łuria (AVLT), (6, 8, 10, 10, 9, 10, 10, 10, 10, after delay 9): maintained correct attention, learning ability as well as short and long-term auditory memory,
4. Verbal Fluency Test (I-18, II-9, III-12): categorial and literal verbal fluency as well as semantic and lexical memory below norm,
5. Trail Making Test by Reitan (TMT) (A-38s and B-1min25s): effectiveness of visual-spatial working memory below average.
6. Stroop Test (I-21s, 0 errors, II-1min7s, 0 errors.): maintained speed and accuracy of read words and verbal working memory, slightly impaired ability to change the response to the new criteria with no tendency for perseveration of previous reactions,
7. Digit Symbol Coding from The Wechsler Adult Intelligence Scale-Revised (WAIS-R) (score=30):

visual and motor coordination, visual memory and ability to learn all below average.

The analysis of psychological evaluation confirmed the presence of the following functioning difficulties: variability in mood and tendency to irritability, difficulty in alleviating negative emotional tension in difficult situations – responding with helplessness, annoyance and lack of initiative, the use of ineffective ways of coping with stress, anxiety, shyness and low self-esteem; reduced capacity in adopting a firm stance in social relations; a slight weakening of cognitive functioning in the field of direct memory, verbal fluidity and efficiency of graphomotor skills that may arise from the attitude of anxiety and withdrawal after failure. It was found that the described symptoms are related to the patient's established patterns of behaviour, with characteristics of avoidant and dependent personality disorder, and disorders in the area of habits in the form of trichotillomania.

Hospital treatment. Venlafaxine has been gradually withdrawn and lithium was introduced in the initial dose of 750 mg/day, which was increased to 1000mg/day with controlled concentration in the serum. After a period of titration of lithium the treatment was augmented with clomipramine at an initial dose of 75 mg/day, followed by 150 mg/day. No hair pulling episodes were observed in the hospital. The patient's sleep quality improved. She also confirmed mood improvement and decreased liability of affect. After approximately a month in the hospital, the patient was discharged to the gastroenterology ward for possible diagnosis of trichophagia-related complications (scheduled gastroscopy). Further psychiatric and psychotherapeutic care was recommended in the outpatient facilities.

Further treatment. The patient regularly reported to the visits in the Mental Health Outpatient Clinic but she refused psychotherapy. She said that she did not pull her hair for a month after leaving the hospital but, with time, her habit of involuntary hair pulling returned, though with lower intensity and concerned individual hair. Her hair gradually returned to its normal appearance (Ill. 3, 4).

DISCUSSION

The etiology of trichotillomania is unclear, controversial is also its position in the modern classification systems of diseases and disorders. According to ICD-10, TTM belongs to the group of habit and impulse control disorders, similarly to DSM-IV which



III. 3



III. 4

classify trichotillomania together with impulse control disorders. In the latest, fifth edition of DSM, trichotillomania has been reclassified to the group of obsessive-compulsive and related disorders which we put to discussion in this paper. An additional obstacle in determining the etiology and nosological position of this disorder is the small number of studies conducted on patients with TTM diagnosis [5, 35].

A theoretical construct justifying the reclassification of trichotillomania in the latest edition of the DSM is the notion of the obsessive-compulsive disorder spectrum, which would include such disorders such as Tourette's syndrome, body dysmorphic disorder, hypochondriacal disorder, explosive personality disorders, eating disorders, intentional self-harm, kleptomania, pathological hoarding or gambling [36-38]. The combination of this group of disorders in a single diagnostic category is to be based on the similarity of symptoms, comorbidity observed, heredity, clinical course, neurobiological background and neuropsychological tests results. The structure of the diagnostic criteria itself testifies against the positioning of trichotillomania among impulse control disorders. Many authors, including the researchers from the *DSM-V Anxiety, Obsessive-Compulsive Spectrum, Post-Traumatic and Dissociative Disorders Work Group*, have observed that in the DSM-IV-TR diagnostic criteria, i.e.

B (An increasing sense of tension immediately before pulling out the hair or when attempting to resist the behavior) C (Pleasure, gratification, or relief when pulling out the hair) are not met in many of the cases [6, 39, 40]. Minor importance of the above cri-

teria in the TTM diagnosis is confirmed by the fact that among patients who experience increased tension and relief accompanying hair pulling, these symptoms are not constant or reproducible in all episodes of hair pulling. Moreover the groups of patients who experience tension and those who do not, hardly differ in terms of clinical correlates [41, 42].

Then how should trichotillomania be classified if placing it with obsessive-compulsive and related disorders seems controversial for at least a few reasons?

Symptomatology. Research on OCD and TTM indicates certain symptomatological similarities. For example trichotillomania patients repeatedly and impulsively pull their hair, which is often accompanied by the elements of compulsions in the form of rituals, i.e. selecting hair, rolling it, putting it in a mouth, swallowing. However, TTM patients hardly experience obsessive thoughts prior to hair pulling and, contrary to OCD, hair pulling produces the feeling of pleasure, gratification [43, 44]. More similarity as far as symptoms are concerned has been observed between TTM and conduct disorders, such as nail biting and skin picking disorder [45, 46].

Clinical course. The peak incidence of TTM is bimodal, and peaks at childhood and adolescence, although most cases have fallen ill at an early age [47]; unlike in the case of OCD – the distribution of age of onset is wider, symptoms can appear in almost every moment of life.

Comorbidity. Several studies have evaluated the frequency of co-occurrence of OCD and potential disorders from the obsessive-compulsive disorder spectrum (OCSD). Most of them have confirmed

a statistically significant more frequent coexistence of the above disorders with obsessive-compulsive disorder as compared to controls (individuals without the OCD diagnosis) – The OCS frequency is in the range of 16-35% [36, 48, 49]. The prevalence of trichotillomania in the studies involving OCD patients was 4% [50]. Both OCD and TTM are characterized by high comorbidity with mood disorders and anxiety disorders, but there is a different comorbidity pattern for each of these illnesses (more frequent depression in the OCD group and higher psychiatric comorbidity than in the case of trichotillomania patients) [44]. Relatively low comorbidity is characteristic for trichotillomania and other impulse control disorders, such as pyromania and pathological hazard, which puts their common etiology into doubt [44, 51, 52]. On the other hand high comorbidity has been shown between TTM and stereotypical behaviour such as pathological skin picking [47, 53].

Heredity, genetic factors. In the families of persons affected by TTM, cases of OCD are statistically more frequent than in the control group. The study involving 16 patients and their families revealed the frequency at the level of 5%, with 0% in the control group [54, 55]. Bienvenu stated that among relatives of patients with OCD, all conduct disorders (including trichotillomania, nail biting or pathological skin picking) are more frequent than in the control group [36]. There is little data regarding the genetic relationships between OCD and TTM. Mutations in the genes *SLITRK1* and *SAPAP3* were reported as associated with Tourette's syndrome, obsessive-compulsive disorder and trichotillomania [56-58].

Neurobiology. The involvement of fronto-striatal circuits is suggested both in OCD and TTM [59-61] though it was not confirmed unequivocally by other studies [62, 63]. In patients with trichotillomania, unlike in OCD, prolactin secretion was not compromised in response to administration of 1- (3-chlorophenyl) piperazine, serotonin receptor agonist, nor were there abnormalities in concentrations of serotonin metabolites in the cerebrospinal fluid [64, 65].

Cognitive functioning. There are studies that compared the cognitive functioning in TTM and OCD, including concentration, memory processes, executive functions, graphomotor and planning skills. Patients with the diagnosis of TTM and OCD had lower scores in tests assessing executive functions, nonverbal memory and spatial planning ability. These studies did not allow to formulate clear conclusions, regarding the correlation between the analysed cognitive functions. Even when statistically significant relationships

were shown, the correlation was not strong. [66, 67]. One of the studies focused on a different patterns of cognitive deficits in patients with trichotillomania and OCD. Patients with trichotillomania had higher deficits in motor response inhibition and patients with OCD lower scores in cognitive flexibility [68].

Response to treatment. Both trichotillomania and OCD are treated with serotonergic drugs. Studies indicate that, in contrast to OCD, trichotillomania's treatment with SSRIs often proves to be ineffective or produces unstable effects [15, 28]. In both disorders it might be useful to add dopamine receptor to SSRIs [28, 69].

Psychotherapy. Among the therapeutic techniques used in TTM are positive motivation, training of habit self-control and a reward and punishment system [15, 70]. Some patients suffering from trichotillomania achieve partial control over the hair pulling in psychotherapy, not by trying to eliminate it completely, but by limiting the pulling only to certain areas or reducing the quantity of hair that can be removed in a single episode [71]. The highest efficiency in the treatment of OCD has been demonstrated by behavioural therapy, based on the technique of exposure and response prevention (EPR), while in the case of TTM it is the therapy based on the training of unlearning habits, also effective in Tourette's syndrome and in pathological skin picking [15, 72, 73].

In the case discussed here, the diagnostics allowed us to exclude other than psychogenic causes of hair pulling. Slightly lowered mood was observed in the clinical picture which did not meet the criteria of depressive episode. The patient showed passive attitude and displayed features of avoidant personality disorder. Hair pulling in her case was an impulsive behaviour but it was not accompanied by obsessive thoughts and so her score in the obsessive-compulsive scale was relatively low, in spite of considerably affected general functioning. The patient had a limited insight into her symptoms, she could not give any reasons for her behaviour and denied that it had anything to do with any external stressors. The initial therapy with the use of serotonergic and noradrenergic drugs did not bring the expected results even after potentializing of the treatment with dopamine receptor antagonist. Only a combination of a tricyclic antidepressant with lithium led to a satisfactory improvement in impulsive hair pulling. As the patient had no motivation to undertake psychotherapy it was difficult to assess the extent to which this additional therapeutic method could possibly lead to the reduction in her symptoms.

CONCLUSIONS

Both the publications that we have quoted in this paper and the case we have presented pose a question on how justified is the suggested relationship between obsessive-compulsive disorders and trichotillomania. It is not only the symptomatology and clinical course but also (though insufficiently studied to date) neurobiological and genetic background that differentiate between these two disorders, which in clinical practice, leads to different therapy measures and different response to treatment. Even if we accept that trichotillomania is a disorder from the OCD spectrum, it certainly requires individual approach, and its position in the classification should not motivate therapeutic decisions. However, we are hopeful that the future directions of research on behaviour, impulse control and obsessive-compulsive disorders will allow for a better understanding and more effective treatment of people suffering from these conditions.

BIBLIOGRAPHY

- Christenson GA, Pyle RL, Mitchell JE. Estimated lifetime prevalence of trichotillomania in college-students. *Journal of Clinical Psychiatry*. 1991; 52: 415-417.
- Rothbaum BO, Shaw L, Morris R, Ninan PT. Prevalence of trichotillomania in a college freshman population. *Journal of Clinical Psychiatry*. 1993; 54: 72-73.
- Mehregan AH. Trichotillomania – a cliniopathologic study. *Archives of Dermatology*. 1970; 102: 129-133.
- Flessner CA, Lochner C, Stein DJ, Woods DW, Franklin ME, Keuthen NJ. Age of onset of trichotillomania symptoms investigating clinical correlates. *Journal of Nervous and Mental Disease*. 2010; 198: 896-900.
- Cohen LJ, Stein DJ, Simeon D, Spadaccini E, Rosen J, Aronowitz B, Hollander E. Clinical profile, comorbidity, and treatment history in 123 hair pullers – a survey study. *Journal of Clinical Psychiatry*. 1995; 56: 319-326.
- Woods DW, Flessner CA, Franklin ME, Keuthen NJ, Goodwin RD, Stein DJ, Walther MR, Trichotillomania Learning Ctr S. The trichotillomania impact project (tip): Exploring phenomenology, functional impairment, and treatment utilization. *Journal of Clinical Psychiatry*. 2006; 67: 1877-1888.
- Western C, Bokhari S, Gould S. Rapunzel syndrome: A case report and review. *Journal of Gastrointestinal Surgery*. 2008; 12: 1612-1614.
- Harth W, Blume-Peytavi U. Psychotrichology: Psychosomatic aspects of hair diseases. *Journal Der Deutschen Dermatologischen Gesellschaft*. 2013; 11: 125-135.
- Fritzsche K, Ott J, Zschocke I, Scheib P, Burger T, Augustin M. Psychosomatic liaison service in dermatology – need for psychotherapeutic interventions and their realization. *Dermatology*. 2001; 203: 27-31.
- Gupta MA, Gupta AK. Psychodermatology: An update. *Journal of the American Academy of Dermatology*. 1996; 34: 1030-1046.
- Stein DJ, Bouwer C, Maud CM. Use of the selective serotonin reuptake inhibitor citalopram in treatment of trichotillomania. *European Archives of Psychiatry and Clinical Neuroscience*. 1997; 247: 234-236.
- Iancu I, Weizman A, Kindler S, Sasson Y, Zohar J. Serotonergic drugs in trichotillomania: Treatment results in 12 patients. *Journal of Nervous and Mental Disease*. 1996; 184: 641-644.
- Ninan PT, Knight B, Kirk L, Rothbaum BO, Kelsey J, Nemeroff CB. A controlled trial of venlafaxine in trichotillomania: Interim phase i results. *Psychopharmacology Bulletin*. 1998; 34: 221-224.
- Ninan PT, Rothbaum BO, Marsteller FA, Knight BT, Eccard MB. A placebo-controlled trial of cognitive-behavioral therapy and clomipramine in trichotillomania. *Journal of Clinical Psychiatry*. 2000; 61:47-50.
- Bloch MH, Landeros-Weisenberger A, Dombrowski P, Kelmendi B, Wegner R, Nudel J, Pittenger C, Leckman JF, Coric V. Systematic review: Pharmacological and behavioral treatment for trichotillomania. *Biological Psychiatry*. 2007; 62: 839-846.
- De Sousa A. An open-label pilot study of naltrexone in childhood-onset trichotillomania. *Journal of Child and Adolescent Psychopharmacology*. 2008; 18: 30-33.
- Grant JE, Odlaug BL, Chamberlain SR, Kim SW. Dronabinol, a cannabinoid agonist, reduces hair pulling in trichotillomania: A pilot study. *Psychopharmacology*. 2011; 218: 493-502.
- Klipstein KG, Berman L. Bupropion xl for the sustained treatment of trichotillomania. *Journal of Clinical Psychopharmacology*. 2012; 32: 298-299.
- White MP, Koran LM. Open-label trial of aripiprazole in the treatment of trichotillomania. *Journal of Clinical Psychopharmacology*. 2011; 31: 503-506.
- Yasui-Furukori N, Kaneko S. The efficacy of low-dose aripiprazole treatment for trichotillomania. *Clinical Neuropharmacology*. 2011; 34: 258-259.
- Ravindran AV, Tran V, VanAmeringen M. Trichotillomania: Effective treatment with quetiapine. A case series. *International Journal of Neuropsychopharmacology*. 2004; 7: S367-S367.
- Barletta Crescente JA, Jr., Guzman CS, Tavares H. Quetiapine for the treatment of trichotillomania. *Revista Brasileira De Psiquiatria*. 2008; 30: 401-401.
- Stewart RS, Nejtcek VA. An open-label, flexible-dose study of olanzapine in the treatment of trichotillomania. *Journal of Clinical Psychiatry*. 2003; 64: 49-52.
- Van Ameringen M, Mancini C, Patterson B, Bennett M, Oakman J. A randomized, double-blind, placebo-controlled trial of olanzapine in the treatment of trichotillomania. *Journal of Clinical Psychiatry*. 2010; 71: 1336-1343.
- Senturk V, Tanriverdi N. Resistant trichotillomania and risperidone. *Psychosomatics*. 2002; 43: 429-430.
- Epperson CN, Fasula D, Wasyluk S, Price LH, McDougale CJ. Risperidone addition in serotonin reuptake inhibitor-resistant trichotillomania: Three cases. *Journal of Child and Adolescent Psychopharmacology*. 1999; 9: 43-49.
- Van Ameringen M, Mancini C, Oakman JM, Farvolden P. The potential role of haloperidol in the treatment of trichotillomania. *Journal of Affective Disorders*. 1999; 56: 219-226.
- Stein DJ, Hollander E. Low-dose pimozide augmentation of serotonin reuptake blockers in the treatment of trichotillomania. *Journal of Clinical Psychiatry*. 1992; 53: 123-126.
- Grant JE, Odlaug BL, Kim SW. N-acetylcysteine, a glutamate modulator, in the treatment of trichotillomania a double-blind, placebo-controlled study. *Archives of General Psychiatry*. 2009; 66: 756-763.

30. Rodrigues-Barata AR, Tosti A, Rodriguez-Pichardo A, Camacho-Martinez F. N-acetylcysteine in the treatment of trichotillomania. *International journal of trichology*. 2012; 4: 176-178.
31. Coric V, Kelmendi B, Pittenger C, Wasylink S, Bloch MH, Green J. Beneficial effects of the antiglutamatergic agent riluzole in a patient diagnosed with trichotillomania. *Journal of Clinical Psychiatry*. 2007; 68: 170-171.
32. Adewuya EC, Zinser W, Thomas C. Trichotillomania: A case of response to valproic acid. *Journal of Child and Adolescent Psychopharmacology*. 2008; 18: 533-536.
33. Lochner C, Seedat S, Niehaus DJH, Stein DJ. Topiramate in the treatment of trichotillomania: An open-label pilot study. *International Clinical Psychopharmacology*. 2006; 21: 255-259.
34. Berk M, McKenzie H, Dodd S. Trichotillomania: Response to lithium in a person with comorbid bipolar disorder. *Human Psychopharmacology-Clinical and Experimental*. 2003; 18: 576-577.
35. Soriano JL, Osullivan RL, Bear L, Phillips KA, McNally RJ, Jenike MA. Trichotillomania and self-esteem: A survey of 62 female hair pullers. *Journal of Clinical Psychiatry*. 1996; 57: 77-82.
36. Bienvenu OJ, Samuels JF, Riddle MA, Hoehn-Saric R, Liang KY, Cullen BAM, Grados MA, Nestadt G. The relationship of obsessive-compulsive disorder to possible spectrum disorders: Results from a family study. *Biological Psychiatry*. 2000; 48: 287-293.
37. McElroy SL, Phillips KA, Keck PE. Obsessive-compulsive spectrum disorder. *Journal of Clinical Psychiatry*. 1994; 55: 33-53.
38. Pigott TA, Lheureux F, Dubbert B, Bernstein S, Murphy DL. Obsessive-compulsive disorder – comorbid conditions. *Journal of Clinical Psychiatry*. 1994; 55: 15-32.
39. Christenson GA, Crow SJ. The characterization and treatment of trichotillomania. *Journal of Clinical Psychiatry*. 1996; 57: 42-49.
40. Report of the dsm-5 anxiety, obsessive-compulsive spectrum, posttraumatic, and dissociative disorders work group. <http://www.dsm5.org/progressreports/pages/0904reportofthedsm-vanxiety,obsessive-compulsivespectrum,posttraumatic,andedissociativedisordersworkgroup.aspx>.
41. du Toit PL, van Kradenburg J, Niehaus D, Stein DJ. Comparison of obsessive-compulsive disorder patients with and without comorbid putative obsessive-compulsive spectrum disorders using a structured clinical interview. *Comprehensive Psychiatry*. 2001; 42: 291-300.
42. Lochner C, Seedat S, Stein DJ. Chronic hair-pulling: Phenomenology-based subtypes. *Journal of Anxiety Disorders*. 2010; 24: 196-202.
43. Tukul R, Keser V, Karali NT, Olgun TO, Calikusu C. Comparison of clinical characteristics in trichotillomania and obsessive-compulsive disorder. *Journal of Anxiety Disorders*. 2001; 15: 433-441.
44. Lochner C, Seedat S, du Toit PL, Nel DG, Niehaus DJH, Sandler R, Stein DJ. Obsessive-compulsive disorder and trichotillomania: A phenomenological comparison. *Bmc Psychiatry*. 2005; 5.
45. Lochner C, Simeon D, Niehaus DJH, Stein DJ. Trichotillomania and skin-picking: A phenomenological comparison. *Depression and Anxiety*. 2002; 15: 83-86.
46. Odlaug BL, Grant JE. Trichotillomania and pathologic skin picking: Clinical comparison with an examination of comorbidity. *Annals of Clinical Psychiatry*. 2008; 20: 57-63.
47. Christenson GA, Mackenzie TB, Mitchell JE. Characteristics of 60 adult chronic hair pullers. *American Journal of Psychiatry*. 1991; 148: 365-370.
48. Brakoulias V, Starcevic V, Sammut P, Berle D, Milicevic D, Moses K, Hannan A. Obsessive-compulsive spectrum disorders: A comorbidity and family history perspective. *Australasian Psychiatry*. 2011; 19: 151-155.
49. Lochner C, Stein DJ. Obsessive-compulsive spectrum disorders in obsessive-compulsive disorder and other anxiety disorders. *Psychopathology*. 2010; 43: 389-396.
50. Jaisoorya TS, Reddy YCJ, Srinath S. The relationship of obsessive-compulsive disorder to putative spectrum disorders: Results from an indian study. *Comprehensive Psychiatry*. 2003; 44: 317-323.
51. McElroy SL, Soutullo CA, Beckman DA, Taylor P, Keck PE. Dsm-iv intermittent explosive disorder: A report of 27 cases. *Journal of Clinical Psychiatry*. 1998; 59: 203-210.
52. Grant JE, Kim SW. Comorbidity of impulse control disorders in pathological gamblers. *Acta Psychiatrica Scandinavica*. 2003; 108: 203-207.
53. Stein DJ, Flessner CA, Franklin M, Keuthen NJ, Lochner C, Woods DW. Is trichotillomania a stereotypic movement disorder? An analysis of body-focused repetitive behaviors in people with hair-pulling. *Annals of Clinical Psychiatry*. 2008; 20: 194-198.
54. Lenane MC, Swedo SE, Rapoport JL, Leonard H, Sceery W, Guroff JJ. Rates of obsessive-compulsive disorder in 1st degree relatives of patients with trichotillomania – a research note. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 1992; 33: 925-933.
55. Schlosser S, Black DW, Blum N, Goldstein RB. The demography, phenomenology, and family history of 22 persons with compulsive hair pulling. *Annals of clinical psychiatry: official journal of the American Academy of Clinical Psychiatrists*. 1994; 6: 147-152.
56. Abelson JF, Kwan KY, O'Roak BJ, Baek DY, Stillman AA, Morgan TM, Mathews CA, Pauls DA, Rasin MR, Gunel M, Davis NR, Ercan-Sencicek AG, Guez DH, Spertus JA, Leckman JF, Dure LS, Kurlan R, Singer HS, Gilbert DL, Farhi A, Louvi A, Lifton RP, Sestan N, State MW. Sequence variants in *slitrk1* are associated with tourette's syndrome. *Science*. 2005; 310: 317-320.
57. Zuchner S, Cuccaro ML, Tran-Viet KN, Cope H, Krishnan RR, Pericak-Vance MA, Wright HH, Ashley-Koch A. *Slitrk1* mutations in trichotillomania. *Molecular Psychiatry*. 2006; 11: 888-889.
58. Zuchner S, Wendland JR, Ashley-Koch AE, Collins AL, Tran-Viet KN, Quinn K, Timpano KC, Cuccaro ML, Pericak-Vance MA, Steffens DC, Krishnan KR, Feng G, Murphy DL. Multiple rare *sapap3* missense variants in trichotillomania and ocd. *Molecular Psychiatry*. 2009; 14: 6-9.
59. Osullivan RL, Rauch SL, Breiter HC, Grachev ID, Baer L, Kennedy DN, Keuthen NJ, Savage CR, Manzo PA, Caviness VS, Jenike MA. Reduced basal ganglia volumes in trichotillomania measured via morphometric magnetic resonance imaging. *Biological Psychiatry*. 1997; 42: 39-45.
60. Stein DJ, van Heerden B, Hugo C, van Kradenburg J, Warwick J, Zungu-Dirwayi N, Seedat S. Functional brain imaging and pharmacotherapy in trichotillomania – single photon emission computed tomography before and after treatment with the selective serotonin reuptake inhibitor citalopram. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*. 2002; 26: 885-890.
61. Chamberlain SR, Menzies LA, Fineberg NA, del Campo N, Suckling J, Craig K, Mueller U, Robbins TW, Bullmore ET, Sahakian BJ. Grey matter abnormalities in trichotillomania: Morphometric magnetic resonance imaging study. *British Journal of Psychiatry*. 2008; 193: 216-221.
62. Stein DJ, Coetzer R, Lee MY, Davids B, Bouwer C. Magnetic resonance brain imaging in women with obsessive-compulsive disorder and trichotillomania. *Psychiatry Research-Neuroimaging*. 1997; 74: 177-182.
63. Rauch SL, Wright CI, Savage CR, Martis B, McMullin KG, Wedig MM, Gold AL, Keuthen NJ. Brain activation during implicit sequence learning in individuals with trichotillomania. *Psychiatry Research-Neuroimaging*. 2007; 154: 233-240.

64. Ninan PT, Rothbaum BO, Stipetic M, Lewine RJ, Risch SC. Csf 5-hiaa as a predictor of treatment response in trichotillomania. *Psychopharmacology Bulletin*. 1992; 28: 451-455.
65. Stein DJ, Hollander E, Cohen L, Simeon D, Aronowitz B. Serotonergic responsivity in trichotillomania – neuroendocrine effects of m-chlorophenylpiperazine. *Biological Psychiatry*. 1995; 37: 414-416.
66. Coetzer R, Stein DJ. Neuropsychological measures in women with obsessive-compulsive disorder and trichotillomania. *Psychiatry and Clinical Neurosciences*. 1999; 53: 413-415.
67. Stanley MA, Hannay HJ, Breckenridge JK. The neuropsychology of trichotillomania. *Journal of Anxiety Disorders*. 1997; 11: 473-488.
68. Chamberlain SR, Fineberg NA, Blackwell AD, Clark L, Robbins TW, Sahakian BJ. A neuropsychological comparison of obsessive-compulsive disorder and trichotillomania. *Neuropsychologia*. 2007; 45: 654-662.
69. Chamberlain SR, Odlaug BL, Boulougouris V, Fineberg NA, Grant JE. Trichotillomania: Neurobiology and treatment. *Neuroscience and Biobehavioral Reviews*. 2009; 33: 831-842.
70. Osullivan RL, Keuthen NJ, Christenson GA, Mansueto CS, Stein DJ, Swedo SE. Trichotillomania: Behavioralsymptom or clinical syndrome? *American Journal of Psychiatry*. 1997; 154: 1442-1449.
71. Prochwicz K, Starowicz A. Trichotillomania. Its course and psychosocial consequences. *Psychiatria Polska*. 2004; 38: 639-649.
72. Himle MB, Woods DW, Piacentini JC, Walkup JT. Brief review of habit reversal training for tourette syndrome. *Journal of Child Neurology*. 2006; 21: 719-725.
73. Woods DW, Miltenberger RG. Habit reversal – a review of applications and variations. *Journal of Behavior Therapy and Experimental Psychiatry*. 1995; 26: 123-131.

Nadesłano/Submitted: 9.10.2013. Zrecenzowano/Reviewed: 25.11.2013. Przyjęto/Accepted: 29.11.2013.

Adres/Address: lek. Agata Nowacka, Klinika Psychiatrii Dorosłych Uniwersytetu Medycznego w Łodzi, ul. Aleksandrowska 159, 91-229 Łódź, e-mail: nowackaa3@wp.pl