



Trichotillomania (Hair-Pulling Disorder)

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Introduction

The relationship between the central nervous system and the skin dates back to its common embryological origin, but historical descriptions of the disorder may appear in texts by Aristotle and Hippocrates, in the Bible, in works of art, or in literary works such as *Romeo and Juliet* (Kim, 2014; Waas & Yesudian, 2018). The occurrence of the illness has been described in moments of outburst or great tension and stress (Franca et al., 2013), and as an expression of disappointment and frustration (Waas & Yesudian, 2018).

The term trichotillomania was coined by the French dermatologist Francois Henry Hallopeau (Hallopeau, 1889) to refer to pulling one's hair, which results in a notable loss of it. For all of us, hair represents an aspect of individuality, identity, and appearance, so it becomes a focus of attention when patients tug their hair repeatedly to the point where it is evinced by areas of absence of hair on the scalp.

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Concept

Trichotillomania is a debilitating mental disorder, currently included in the obsessive-compulsive spectrum, characterized by recurrent hair pulling, leading to significant hair loss and functional impairment in various areas of daily life (academic, social, relational, among others) (Torales et al., 2021).

Although the description of the disorder in the scalp is more frequent, it can also appear in the pubic area (Piquero-Casals & Morgado-Carrasco, 2020), the eyelids (Smith, 1995), and any region populated by hair (Minichiello et al., 1994) or more curiously, only be associated with sleep (9). It can also involve more than one area of the body (Minichiello et al., 1994).

Epidemiology

People who pull their own hair and leave areas uncovered may experience discomfort and avoid social situations and consultations (Miltenberger et al., 2006), so there may be an underreporting in the illness data.

Initially included in the DSM-III-R in 1987, it was added to the chapter of impulse control disorders in the DSM-IV in 1994 (Minichiello et al., 1994) and is currently within obsessive-compulsive and spectrum disorders in the DSM-5 (American Psychiatric Association, 2013). Categorical changes are related to an evolution in the understanding of this disorder. This subject will be expanded upon in the section “Clinic” of this chapter.

A lifetime prevalence of 1–3% is described. Frequently beginning in childhood, with an average age of onset between 5 and 13 years, the proportion in terms of its appearance by sex is usually equal in children, but as they advance in age the difference is inclined towards women with rates that can be up to 10 times higher with respect to males (Stein et al., 2005; Stewart et al., 2018; Torales et al., 2019). Trichotillomania can precede comorbid mental disorders, such as anxiety and disruptive behavior disorders, which are observed mainly in children and adolescents, so its presence takes on added value, in terms of evolution (Torales et al., 2021).

Etiopathogenesis

Like excoriation disorder, it is within the group of repetitive body-oriented behaviors (Torales et al., 2021), included within the spectrum disorders of obsessive-compulsive disorder (OCD) with which it shares overlapping characteristics, although most of the data still come from preliminary studies (Stewart et al., 2018).

There is a familial component, in those people with a family history of trichotillomania, there is a greater chance of recurrences in terms of hair pulling (Grant & Chamberlain, 2016).

In the early 1990s, trichotillomania was hypothesized to be part of the OCD spectrum due to levels of comorbidity, response to drugs such as clomipramine, familiarity, and the phenomenology of the disorder. This hypothesis has expanded the construct to a spectrum of excessive and inappropriate grooming behaviors (Swedo & Leonard, 1992).

As in OCD (Zhu et al., 2015), there is evidence of glutamatergic dysfunction in the cortico-striatal-thalamic-cortical (CSTC) pathway. Symptoms of trichotillomania are associated with increased excitatory metabolism in the pregenual anterior cingulate cortex (pACC) and in the thalamus. The

effectiveness of behavioral therapy in relieving the symptoms is associated with the suppression of the activity of the direct CSTC pathway (Peris et al., 2020). The anterior cingulate cortex (ACC) is involved in cognitive control, and it is part of an emotional and sensorial information processing network. If this region acts through an inhibitory emotional control (slowing down emotions) both consciously and unconsciously, an initial unconscious emotion produced by the amygdala would necessarily require of attention, here is where the center of attention, the thalamus, intervenes. In practical terms, the patient, after a stressful and tiring day, is watching television fully immersed in this activity, then almost automatically, they start playing with their hair and notice irregularities in its structure from the root to the tip, which is why they pull it and examine it. The previous emotional state of the patient precedes the change in the attentional focus to another area, the hair. Now that attentional resources have been recruited and the stimuli have entered through the cortex, the CSTS circuit is activated. Therefore, the ACC, as a bridge in this circuit, processes the information, detects an increase in the reward and a decrease in the effort threshold (due to repetition), and plans a response. The cortex initiates an action.

Trichotillomania is conceptualized by some authors as a spectrum of stereotyped or self-injurious conditions (Stein et al., 2005), as a way of distinguishing it from the common aspects of OCD. The neuroimaging studies indicate there is a decrease in volume in the left putamen, not in the caudate, which is consistent with the more motor nature of hair pulling (Stein et al., 2005). In a case series that examined brain changes, patients with trichotillomania showed increases in gray matter density in various brain regions involved in the regulation of affect, motor habits, and top-down cognition (i.e., left caudate/putamen, left hippocampal-tonsil formation, bilateral cingulate cortices, and right frontal) compared to controls (Grant & Chamberlain, 2016).

The evidence about structural changes in the brain from imaging studies is growing, there is evidence of increased thickness of the cortex in the lower right frontal gyrus when compared with healthy controls of the same age, sex, and level of education regardless of the severity of symptoms, measured with the Massachusetts General Hospital Hairpulling Scale (MGH-HPS), and these findings differ from those of OCD (Chamberlain et al., 2018). Changes in the structure could also depend on the mentioned vulnerability and the chronicity of the disease (Grant et al., 2020b).

An interesting pathway comes from animal models in which genetic alterations in SAPAP3 are manifested clinically as compulsive excessive grooming behaviors, increased anxiety, and response to selective serotonin reuptake inhibitors (SSRIs) (Welch et al., 2007). The human counterpart of the Sapap3 gene is the DLGAP3 gene, which encodes proteins that participate in glutamatergic neurotransmission at the postsynaptic membrane level, its alteration has been linked to the OCD spectrum, as well as other psychiatric disorders (Rasmussen et al., 2017). Table 39.1 summarizes some aspects of etiopathogenesis (Chamberlain et al., 2018; Grant et al., 2020b; Grant & Chamberlain, 2016; Peris et al., 2020; Rasmussen et al., 2017; Stein et al., 2005; Stewart et al., 2018; Torales et al., 2019, 2021; Welch et al., 2007; Zhu et al., 2015).

The psychological theories regarding the disorder are varied, some of them referring to loss or separation in childhood, specific types of parents, or neurotic conflicts and internalizing disorders (Torales et al., 2019); others describe the disorder as a behavioral response to negative and unwanted emotions (Anwar & Jafferany, 2019). There is evidence showing that people with hair-pulling behaviors have more difficulty regulating their emotions when compared to healthy controls, which lends credit to the hypothesis that this conduct allows individuals with tendencies toward perfectionism to modulate their emotions and to relieve tension (Torales et al., 2019).

The etiology of trichotillomania is still in the initial stages of study and understanding, although the manifestations are not recent.

Table 39.1 Etiopathogenesis of trichotillomania

Antibodies are generated after a group A β -hemolytic streptococcus infection cross-reacts with neurons, forming antineuronal antibodies. These, at the level of the basal ganglia, can cause behavioral disturbances. This is probably due to a genetic predisposition to specific immune responses to different antigens.

Research has shown dysfunctions in the serotonin and dopamine systems, with genotypic and allelic variants in the distribution of the serotonin 5-HT_{2A} receptor among patients with trichotillomania and people without the disease. Likewise, there is evidence that patients have some response to treatment with selective serotonin reuptake inhibitors and dopamine blockers.

Brain structural abnormalities have been reported, since patients with trichotillomania present a decrease in the volume of the putamen, right ventricle, and cerebellum.

Added to structural abnormalities are abnormalities in brain function, with an increase in glucose metabolism in both cerebellar hemispheres and in the upper right parietal region being observed in some patients.

Research suggests the existence of mutations in the SliTrk5 gene, which is involved in the formation of neuronal connections. These mutations have been shown to generate abnormal neuronal connections, which could lead to trichotillomania. Likewise, alterations in the SAPAP3 gene are associated with hair pulling in humans.

Lastly, a dysfunction of endogenous opioid activity also appears to be involved in the pathophysiology of trichotillomania.

Signs and Symptoms

In 1939, perhaps one of the first case series of patients who pulled their own hair was published, although its description was more focused on trichophagia, one of the complications it can lead to. Most of the subsequent data have come from case reports (Stein et al., 2005).

Although its appearance at younger ages is not uncommon (Torales et al., 2021), the mean age of onset is between 10 and 13 years (Anwar & Jafferany, 2019). Children may not have the emotional expressiveness and the awareness skills necessary to report this type of phenomenon, so they depend on other informants to report it (Torales et al., 2019).

Pulling out hair at an early age can spontaneously fade over time, without any intervention (Stein et al., 2005). The duration of the disorder can be variable, from 3 (King et al., 1995) to even 21 years (Grant & Chamberlain, 2016), so its early diagnosis and intervention are essential to reduce morbidity and more frequent complications.

Trichotillomania was not listed as a mental health disorder in the Diagnostic and Statistical Manual of the American Psychiatric Association until DSM-III-R (1987), when it was classified as an unspecified impulse control disorder. In the fifth edition of the DSM (DSM-5) (American Psychiatric Association, 2013), trichotillomania was included in the chapter of OCD and related disorders along with the excoriation disorder, body dysmorphic disorder, and hoarding disorder. Patients affected by trichotillomania repeatedly pull out their hair, resulting in hair loss, and with marked impairment in various areas of personal functioning. Also, patients repeatedly attempt to decrease or cease behavior without any success. Hair-pulling behavior or hair loss cannot be attributed to another medical condition (e.g., a dermatological condition) or to any another mental disorder (e.g., body dysmorphic disorder) (American Psychiatric Association, 2013).

Since its inception within the impulse control disorder, with the description of the irresistibility of the impulse to pull out hair, the concept has been modified by finding different patterns in practice. Christenson and Mackenzie (Christenson & Mackenzie, 1994) identify two types of patterns according to a person's behavior when pulling hair: "centered," in which the person does it intentionally, or "automatic," in which the person does it unconsciously. The degrees to which people are "focused" or do so "automatically" vary (Flessner et al., 2008).

Flessner et al. (2008) provide some examples of automatic behaviors, such as pulling while performing some sedentary activity, such as driving, reading, or watching television. Here, the pull is not recognized until it has been in progress for some time or has been completed. In focused behaviors,

Table 39.2 Main precipitants of trichotillomania

Hair factors	Hair visual or tactile factors (color, shape, texture, etc.).
Lifestyle	Sedentary lifestyle, watching television, reading, talking on the phone, homework lying down, etc.
Emotional aspects	Situations of psychosocial stress, irritability, altered relationship with parents (especially with the main attachment figure, usually the mother), hospitalization of patient or relatives, parents' divorce, birth of a new brother/sister, sibling rivalry, address changes, school problems, physical or sexual abuse.
Physiological aspects	Menarche, menstrual cycle, pregnancy.
Addictions	Some evidence of association with cocaine use.

episodes appear in which the person actively looks for hairs to pull, such as those that are irregular in their path, or consciously pulls in response to some negative emotion or event (for example, anxiety, stress, depressive feelings). Some investigators have hypothesized that “concentrated” traction distracts an individual from unwanted thoughts and/or feelings and is frequently associated with the criteria of reduced need and stress necessary to confer a diagnosis (Flessner et al., 2008). This difference gives much more value to the triggers when questioning patients and future psychotherapeutic interventions. To emphasize, in a sample of Italians, the legs are the most frequent region from which they pull their hair, Italian men do it more frequently while driving, unlike women (Bottesi et al., 2016b), knowing this allows the therapist to develop training.

In Table 39.2, the main precipitants of trichotillomania are cited (Torales et al., 2019).

The clinical interview is the gold standard for the diagnosis of trichotillomania. On examination of the patient, pseudo-alopecic plaques of various sizes are found (some new hairs and others short and broken), with different degrees of extension (Torales et al., 2019). Some patients have the sign of Friar Tuck, a character in the Robin Hood legend, in which they resemble the features of Christian monks with areas of hair loss on the crown of the head.

It is common for people with this disorder to go to the dermatologist in the first instance, either on their own behalf or accompanied by their parents if they are children (Sah et al., 2008), so in a case of alopecic areas in the absence of other explanations, such as alopecia areata, it is worth investigating more about trichotillomania. The dermatologist can use other instruments, such as the trichoscope, to expand the description.

Hair pulling can be done with the dominant or non-dominant hand, or both are sometimes used. Many patients may not be satisfied with just pulling their hair: They examine it, manipulate it from root to tip, put it in their mouths, and some even chew and ingest it. The diagnosis of trichotillomania is quite simple—a thorough examination is necessary, especially when the person admits to having ingested hair or when such behavior is suspected (Grant & Chamberlain, 2016).

As we had previously pointed out, the disorder can even persist for decades, leaving areas devoid of hair and with scar tissue, which prevents the growth of new hair. This can lead to the development of avoidance behaviors in the patient: wearing hats and resisting going out without them; wearing scarves if it involves the beard region and glasses if it involves the eyebrows and eyelashes region and the use of makeup to cover or hide some areas; they can avoid social situations that may reveal the lack of hair, such as going to hairdressers, frequenting swimming pools, and going to public places; they may avoid having a naked torso if it involves regions such as the thorax or the abdomen.

In addition, people with trichotillomania may have other habits, such as onychophagia, biting of the cuticles or knuckles, sucking on the fingers, slapping, chewing or biting the tongue, bruxism, picking the nose, scratching, hitting the head, or rocking the body. Some of these habits seem unimportant, but interventions to address them (such as intervening on finger sucking in children) can make symptoms of trichotillomania disappear (Torales et al., 2019). When the manipulation of nails, hair, and skin are combined, it is called dermatillomania (Christenson et al., 2001).

It is noteworthy that some means such as tests and others carried out to obtain data online can result in greater clinical richness and reduce discomfort during the interview. For example, Bottesi et al. conducted research in Italy (Bottesi et al., 2016b) with a sample obtained through face-to-face and online group assessments of people with trichotillomania and healthy controls. Patients who completed the surveys virtually with trichotillomania were mostly unemployed, single, and younger than those in the face-to-face group, they pulled their hair from more areas, and in general, they had greater associated disability.

With data obtained from the USA and South Africa and a large sample, Lochner et al. (2019) divided into groups people with trichotillomania, those without comorbidity, with major depressive disorder as comorbidity, and with a combination of comorbidities. Those with greater comorbidity also presented greater symptomatic severity, so assessing comorbidity is central. The greater the chronicity, the greater the comorbidity (Grant et al., 2020a).

Some of the comorbidities associated with trichotillomania are as follows (Duke et al., 2010; Grant et al., 2020a; Houghton et al., 2016; Lochner et al., 2019):

- Obsessive-compulsive disorder.
- Major depressive disorder.
- Substance use disorder.
- Alcohol use disorder.
- Social phobia.
- Excoriation disorder.
- Panic disorder.
- Post-traumatic stress disorder.
- Tics.

Impact and Evaluation Scales

Although it is not categorically coded, trichotillomania can be variable in terms of the severity of its presentation, this depends on comorbidity, chronicity, and social, occupational, academic, and psychological functioning (Woods & Houghton, 2014). We echo the words of some relevant researchers on the topic (Houghton et al., 2015a) about the approach to trichotillomania from the categorical and non-dimensional point of view. Dimension and category are not necessarily exclusive or opposed, and the hierarchical taxonomy model of psychopathology (HiTOP) has emerged as a research effort to address these problems and to try to erase the arbitrary boundaries between psychopathology and normality (Kotov et al., 2017). The growing evidence and the coherence with the clinic will reveal the direction that it will take, but to date, the semi-structural interviews, the effect on functionality, and the scales are useful to measure the impact of the disorder.

As we pointed out previously, the criteria for diagnosing trichotillomania underwent changes from DSM-III-R to DSM-5. Many patients did not present with increasing drive or tension before pulling or attempting to resist, and pleasure, relief, or gratification during or after pulling (Lochner et al., 2011), leading to elimination of these criteria.

The clinical value of the mental health scales for monitoring and measuring severity is known, but in addition to this, it allows people who are new to the subject to know clinical elements validated by people with extensive experience and that are useful in interviews. With their advantages and disad-

vantages that escape this analysis, there are tools to be applied by the clinician or by the patient himself (Woods & Houghton, 2014).

At the time of preparing this text, in the midst of a pandemic, research is being carried out that uses digital media and those formats to be completed by patients. As we mentioned above, for patients with trichotillomania this may offer an added value.

In the case of children, clinician-completed scales have more value, especially when patients have not yet acquired literacy; if they have acquired it, self-completed scales are available (Harrison & Franklin, 2012; Tolin et al., 2008; Woods & Houghton, 2014):

- Trichotillomania Scale for Children – child and parent versions (TSC-C, TSC-P): self-reported, measures severity, distress, and disability.
- Milwaukee Inventory of Subtypes of Trichotillomania MIST-C: to evaluate hair-pulling styles.
- National Institutes of Mental Health Trichotillomania Severity Scale (NIMH-TSS): applied by the clinician to assess severity, widely used.
- Massachusetts General Hospital Hairpulling Symptom Severity Scale (MGH-HS): widely used, self-administered and measures “severity” as “degree of control and resistance”.

A fundamental element to consider within the evaluation is the cultural aspect of hair pulling. In some cultures, for example, tearing hair can be a normal reaction to pain or extreme loss; in other cultures, hair avulsion is considered a mourning ritual or a rite of passage into adulthood, while in some cultures all hair is pulled from the scalp to denote detachment from grief (Duke et al., 2010). For all these reasons, it is necessary to investigate the cultural system and what is accepted or not found in the act itself.

Already as adults, those who suffer from trichotillomania have a high proportion of mental disorders, in some samples, it represents one in three patients (Houghton et al., 2016). Even a great majority suffer from other repetitive behavior oriented to the body (Anwar & Jafferany, 2019), which increases the impact. Those who suffer from trichotillomania rarely seek treatment, either because of the shame it causes them, because they consider it a bad habit, or because they think it cannot be treated (Torales et al., 2019, 2021).

Physical impact: Some patients ingest their own hair, forming a mass of hair (trichobezoar) in the lumen of the digestive tract, which causes gastrointestinal complications, such as intestinal obstruction, intussusception, ulceration, or perforation (Torales et al., 2019). As with Pica (Khan & Tisman, 2010), trichophagia is described as associated with an iron deficiency, the latter more related to the male gender and more severe presentations of trichotillomania (Grant & Odlaug, 2008). The so-called Rapunzel syndrome is described—a condition in which the body of the hairball is in the stomach and its tail extends to the duodenum, the ileum, or all the way to the colon; the clinical presentation can be varied and the diagnosis is based on clinical grounds, laboratory results that indicate iron deficiency and sometimes a decrease in protein, and by radiological findings (Ullah et al., 2016). Other complications can occur due to the fact of pulling the hair in the areas where it is most frequent: skin irritation, infections, and injuries due to repetitive use of the hands (Harrison & Franklin, 2012).

The emotional impact of trichotillomania can include guilt, revenge, decreased self-esteem (Harrison & Franklin, 2012), depression and anxiety (the most studied), use of alcohol, tobacco, and illicit drugs (Franklin et al., 2008; Lewin et al., 2009). The impact on functionality can be translated into decreased school performance and difficulty studying (Franklin et al., 2008), decrease in social activities, and difficulties making friends; it is hypothesized that depression and anxiety act as mediating mechanisms (Lewin et al., 2009), and the presence of internalizing symptoms plays a central role in the acquisition of skills and the implementation of routines to carry out treatment.

Table 39.3 Differential psychiatric and dermatological diagnoses of trichotillomania

OCD and related disorders	Patients with obsessions of symmetry, in the context of OCD, can pull out their hair as part of their rituals. For their part, individuals with body dysmorphic disorder may pull out hair that they consider to be non-aesthetic, asymmetric, or abnormal. In the cases cited, the diagnosis of trichotillomania is not made.
Developmental disorders	Patients with developmental disorders may pull out their hair, but not in the context of trichotillomania, but rather as stereotypical behaviors.
Psychotic disorders	Patients with a psychotic disorder may pull their hair out in response to a delusion or hallucination. The diagnosis of trichotillomania is not made in this case.
Substance use disorders	Hair pulling can be exacerbated by the use of certain substances (such as stimulants), although it is unlikely that a substance is the cause of persistent pulling.
Dermatologic differential diagnoses	Scarring alopecia: Chronic discoid lupus, papular lichen planus, folliculitis decalvans, among others. Non-scarring alopecia: Alopecia areata, alopecia androgenetica, telogen effluvium.

Differential Assessment and Diagnoses

The clinical interview remains the gold standard in the evaluation of patients with trichotillomania. In the case of children and adolescents, the confluence of data guides the impression, since interviews are usually more difficult due to the inaccuracy of the data, the contrast of the data provided by the patient and that of the informants, the associated shame, the lack of awareness of the pulling behavior, and more specifically the lack of the tension–gratification component (Torales et al., 2019). Hair loss can be the reason for consultation and is due to multiple etiologies, but in the presence of alopecic plaques located within the reach of person’s dominant hand, generally in the frontoparietal area (Cisoñ et al., 2018), the presence of hair in areas of different sizes, some new and others short and broken, the suspicion of trichotillomania is reasonable. We must remember that they can also pull hair from any part of the body such as body hair, facial hair, pubic hair, eyebrows, and eyelashes.

The interview should be given within the framework of warmth, asking questions that allow the person not to feel ashamed, trying to normalize the event so that the discomfort is reduced. The medical history should focus on what we mentioned earlier as triggers of hair-pulling behavior and styles, but other causes should be included and excluded. Some drugs and cosmetic products can cause hair loss as an adverse effect, so they should be investigated. A higher frequency of disorder has been reported in family members (King et al., 1995), so it is necessary to inquire about a family history of repetitive body-oriented behaviors and similar symptoms. It is possible that both the patients and the relatives are not aware of the disorder and the hair-pulling behavior and there are no other explanations, in which case additional tests may collaborate with the correct diagnosis. Trichoscopy can serve as an aid to evaluate other causes; it is reliable, easy to use, and inexpensive for hair diseases; and it can clarify other causes that explain hair loss (Cisoñ et al., 2018).

Trichotillomania is a non-scarring alopecia; differential dermatological diagnoses will be made with these. Trichomalacia (basically misshapen hair) and intrafollicular pigmented casts are considered by some researchers to be the two main elements in making the diagnosis. The differential psychiatric and dermatological diagnoses are summarized in Table 39.3 (Torales et al., 2019, 2021).

Treatment

The decision to treat and the agent and the means used depend on a series of factors: current age of the patient, chronicity and severity of symptoms, associated disability, comorbidity, choice of patient/parents or guardians, and availability of treatments. To date, there are no approved pharmacological treatments; many of them are used based on indirect evidence or on their results in case reports, others based on evidence of neurobiological dysfunction. The evidence for psychotherapeutic interventions seems more encouraging.

In trichotillomania, clinicians can rely on a combination of qualitative and quantitative data to measure improvement, interpreting scores based on clinical judgment. Although improvement in the scales does not mean “response” in all cases, in trichotillomania the percentage reductions in the scales were greater when predicting recovery than when predicting response. As an example, we could consider the case of a patient who enters some modality treatment in the severe range, but exits treatment in the moderate range; it has the same degree of “improvement” as a person who enters treatment in the moderate range and leaves in the mild range or does not meet the score to be diagnosed. However, achieving recovery requires a greater degree of change for those who start treatment in the severe range compared to those who start in the moderate range, meaning that individuals in the latter group have more probabilities of achieving recovery than those in the first group (Houghton et al., 2015b).

Objective and subjective elements must be combined to assess the loss of hair; the most important target is in the behavior of pulling the hair. Identifying the triggers (Duke et al., 2010) and affective states that are part of the cycle together with external stimuli, such as places, situations, and objects (Bottesi et al., 2016a), is central when developing psychotherapeutic strategies.

The first approach to a correct treatment is a proper diagnosis. Dermatologists may be the first to have contact with a person with trichotillomania, so in the presence of a child with this behavior, the conduct should be that of monitoring and accompaniment. Parents may need to simply ignore the behavior until the time comes when it just goes away. They can also evaluate other diagnoses that could start trichotillomania, such as alopecia areata. There may be resistance to referral to psychologists and psychiatrists, so interventions that may occur within consultations, such as increasing awareness of hair-pulling activities or use of tape or Band-Aids on the distal index fingers, may be useful (Sah et al., 2008).

The next step involves non-pharmacological interventions, with Habit reversal therapy (HRT) as the main representative and with better evidence (Bate et al., 2011).

Habit reversal therapy emerged as a necessity in the face of interventions that were not effective and resistant to other forms of treatments designed until the 1970s. It gathered information with high clinical richness from observations and evidence, such as that habits are initially formed from normal reactions or that it may have started as an infrequent but normal behavior, which has increased in frequency and has been altered in its shape (Azrin & Nunn, 1973). He pointed out that these persisted due to the chain of responses, limited awareness of reactions, excessive practice, and social tolerance that ended up reinforcing it. The intervention focused on counteracting these influences: Movements that were “the reverse” of the habit were practiced. The patient became aware of each instance of the habit and differentiated it from their usual chain of response. Social approval was provided for their efforts towards inhibiting the habit.

In the 1980s, the authors of HRT put it into practice for trichotillomania with a 2-hour session and compared it with another behavioral technique in which the patient imitates pulling movements in front of the mirror, but without actually pulling. After 22 months, the participants maintained the positive effects of the therapy (Duke et al., 2010).

Table 39.4 Drugs for the treatment of trichotillomania

Drug	Initial dose (mg/day)	Average dose (mg/day)	Comments
Clomipramine	50	50–250	Significant reduction in severity.
N-Acetylcysteine	600	2400	Promising option, although currently with limited evidence. Reports of substantial improvement in children
Aripiprazole	3	3–15	Evidence from uncontrolled studies and case reports. It is used in cases of failure with serotonergic agents.
Olanzapine	2.5	10–20	Monotherapy and compared to placebo result in effective in reducing symptoms.

HRT paved the way for other interventions that were developed from it, such as other techniques to address repetitive behaviors oriented to the body: training in increasing awareness, role-based interventions, self-control and self-monitoring, aversion, massive practice of the behavior until generating fatigue, relaxation training, social support, and stimulus control (Flessner, 2011).

Training in HRT consists of 3 phases: sensitization and awareness, training in competitive reactions, and social support. In the first stage, the sensations and behaviors that precede the act are described and the repetitive behavior itself is recognized, and an attempt is made to identify those warning signs for the behavior. In the second stage, competitive reactions are developed: a behavior that prevents hair pulling, which must be carried out for 1 min, when the patient identifies a warning sign or that they are pulling hair, directly, for example, crossing their arms, clenching their fists, keeping their hands busy, driving with both hands on the wheel, as mentioned above, or having some tape on their fingertips. In our experience, any conduct can be used as a competitive reaction if it complies with the following criteria (Torales Benítez & Arce, 2014):

- As long as it is carried out, the behavior to be avoided is impossible to carry out.
- It can be used in any situation.
- It is not noticed by other people.
- It is accepted by the patient.

If there are no trained therapists in the model, if patients prefer pharmacological treatments, or if there is associated comorbidity, the pharmacological agents become relevant. We must first emphasize that despite the fact that some drugs, such as selective serotonin reuptake inhibitors (SSRIs), are widely prescribed, they do not have solid evidence in the absence of comorbidity to treat trichotillomania (Torales et al., 2020).

Although we will address the medication prescribed by psychiatrists, dermatologists also prescribe drugs. Some of them modify psychological symptoms, such as antihistamines to reduce anxiety and itching (Sah et al., 2008).

There are no approved drugs for the disorder, the evidence is mixed, and most results come from studies of small samples. Some studies do not compare them with placebo, and some do not show a difference with placebo and, in other cases, the duration of the study is very short.

Having made this reservation, the pharmacological recommendations and comments are summarized in Table 39.4 (Torales et al., 2020).

Conclusion

Trichotillomania is a disabling mental disorder, belonging to the obsessive-compulsive spectrum, characterized by patient's recurrent behavior of pulling out his/her own hair with significant functional impairment in various areas of daily life. It may be based on negative emotions as well as on

supposed neurobiological alterations, although its etiology is still in the initial stages of study and understanding.

Trichotillomania can precede comorbid mental disorders, such as anxiety and disruptive behavior disorders, which are observed mainly in children and adolescents, so its presence takes on added value, in terms of evolution.

The clinical interview remains the gold standard in the evaluation of patients with trichotillomania. In the case of children and adolescents, the confluence of data guides the impression, since interviews are usually more difficult due to the inaccuracy of the data.

The decision to treat and the agent and means used depend on a number of factors: the patient's current age, chronicity and severity of symptoms, associated disability, comorbidity, patient/parent or guardian choice, and availability of treatments. Clinical outcomes, especially among children and adolescents, show an episodic evolution usually followed by a complete remission if adequately treated.

Cognitive behavioral therapy (with habit reversal training) is highly recommended as the first-line intervention, followed by psychopharmacotherapy. A multidisciplinary approach involving a psychologist, dermatologist, pediatrician, and psychiatrist is essential for a correct assessment of the illness' components and its long-term successful treatment.

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