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Stuttering and Social Phobia – the Main Issues Relating to the Biological Therapy of Social Phobia

SUMMARY

The article presents the relationship between stuttering and social phobia, which often accompanies stuttering. The first part presents diagnostic indications of social phobia and stuttering. The second part presents the effects of the treatment of social phobia with psychotropics, mainly antidepressants, which translate into a reduction, and in some cases even into the resolution of stuttering symptoms. This fact does not mean that treatment of people who stutter and suffer from social phobia should be limited to administering drugs. The prospect of discontinuing pharmacological treatment and maintaining the patient's improved mental and social functioning requires the use of a parallel speech-language therapy aimed at enhancing the fluency of speech.

Key words: stuttering, social phobia, speech-language therapy, pharmacotherapy

INTRODUCTION

In modern logopedics, stuttering is viewed as a set of specific symptoms characteristic of speech dysfluency. Practice proves that apart from the symptoms regarded as typical of stuttering, some people may develop disorders which should not be classified as stuttering. If such problems are found, the required therapy is beyond the competence of a logopedist. This occurs in cases where social phobia, which occasionally develops in the course of stuttering, is diagnosed. The article seeks to define the interrelationship between stuttering and social phobia and provide knowledge about the diagnosis and biological therapy of social phobia.

Stuttering (ICD-10 F98.5, ICD-9 307.0) is a speech fluency disorder whose symptoms are described at various levels: communicative, psychological and neu-

rophysiological. At the level of communication, the dominant symptom is pathological speech dysfluency consisting primarily in blocking, prolonging and repeating speech sounds. At the mental level, the common signs include the awareness of being affected by the disorder, the anticipation of the disorder manifesting itself and the accompanying pathological anxiety reactions (logophobia). At the neurophysiological level, the main symptom is increased muscular tension within the speech organs (spasticity). Although there are feedback mechanisms between the described symptoms, it is a specifically pathological speech dysfluency that should be regarded as the main symptom of stuttering (Woźniak, 2015).

It should be stated that, in the majority of cases, dysfluency in stuttering is caused by neuroanatomical and neurofunctional differences found at the level of the brain (Chang, Zhu, 2013; Chang et al., 2015). This mainly concerns impaired connections in motor planning and speech control regions in the left hemisphere of the brain. This phenomenon may lead to delays in information processing and be linked to laterality disorders within auditory feedback control of speech (the use of the right hemisphere and the left ear to control speech in right-handed people).

Three groups of factors can be distinguished in the etiology of stuttering: predisposing factors, triggering factors and sustaining factors. As has been stated, the predisposing factors are biological in nature (genetically determined “reduction of connections”) and mostly beyond our influence. These factors determine the predisposition to dysfluent speech. The triggering and sustaining factors are more difficult to pinpoint. They are psychological and environmental in nature; they are connected with a number of variables linked with the personality of a person (for instance, their tendency to perfectionism), their temperament (for example, their high emotionality), as well as the presence of stress factors in the environment (such as anxieties related to the listeners’ reactions or to the anticipation of dysfluency in specific situations). These factors can be influenced by the people in the stuttering person’s environment and the stuttering person themselves. Some people develop a severe environmental phobia. Consequently, the resultant is a network of interconnections between stuttering and social phobia:

1. Stuttering without social phobia
2. Social phobia without stuttering
3. Stuttering co-existing with:
 - a) mild or moderate social phobia
 - b) severe social phobia.

Thus, it can be claimed that social phobia (social anxiety disorder) and stuttering are phenomena which often merge together. Numerous symptoms of speech dysfluency result from the fear of speaking (logophobia) but at the same time dysfluency leads to logophobia. On the other hand, logophobia, defined as the fear

of articulating specific sounds or words, or of speaking in specific circumstances, is one of the symptoms of social phobia. It is not uncommon that despite the effective supportive treatment of stuttering, the symptoms of social phobia persist, later becoming risk factors for a relapse of stuttering and the worsening of other social phobia symptoms. These dynamic interconnections between social phobia and stuttering led us to present the possibilities of pharmacological treatment of social phobia, which could be a useful supplement to the speech-language therapy of stuttering, especially in cases where the symptoms of social phobia are particularly acute.

The treatment of social phobia then involves speech-language therapy, psychotherapy, and pharmacological treatment. Obviously, this concerns cases in which social anxiety disorder co-occurs with stuttering and manifests itself in logophobia.

In the first part of the study we will discuss the diagnostic indications of social phobia and stuttering which are used in psychiatry. In the second part, we will present the effects of treating social phobia with psychotropic drugs, mainly antidepressants, which translate into the reduction in or, in some cases, even the resolution of the symptoms of stuttering. This does not mean that the treatment of people who stutter should be limited to administering drugs. The prospect of discontinuing pharmacological treatment and maintaining the patient's improved psychological and social functioning actually requires that parallel speech-language therapy aimed at enhancing speech fluency should be provided.

MODERN CLINICAL DIAGNOSTICS OF SOCIAL PHOBIA (SOCIAL ANXIETY DISORDER)

General information about social phobia (ICD-10 **F.40.1**) is given below:

- In terms of frequency of occurrence, social phobia is the third mental disorder among the general population, following depression and alcohol abuse.
- The early onset of social phobia, usually at about 12–14 years of age, is the reason for the disorder not being treated as a separate nosological unit.
- Until the 1980s, social phobia was not included in diagnostic systems, which reflected the fact that sufferers went unnoticed as they tend to avoid contact with therapists.
- In social phobia, anxiety does not subside during stressful activity.
- Lifetime prevalence of social phobia among the general population is ca. 7%; in the USA, the symptoms of social phobia (according to DSM-IV) affect 7.2 million people.

- Social phobia is twice as common in women.
- Typically, social phobia manifests itself in the first or second decade of life; the onset of the disorder after the age of 25 is very rare.
- Social phobia affects ca. 9% of the child population; in children, it most commonly manifests itself as selective mutism, reactive attachment disorder (RAD).
- Social phobia is a disorder associated with numerous coexisting conditions.
- Social phobia has a particularly adverse influence upon social functioning.

In the vast majority of cases, social phobia is misdiagnosed and erroneously treated (according to Hoffman, Di Bartolo, 2014).

Social phobia (social anxiety disorder) is classified among anxiety disorders. The diagnostic criteria for social phobia according to the Mini-International Neuropsychiatric Interview (M.I.N.I.), the compilation of ICD-10 and DSM-IV (Sheehan et al., 1998), are presented below.

The criteria of social phobia, according to M.I.N.I.

F. Social phobia. F.40.1

F	1	a	In the past month the patient has experienced anxiety about becoming the centre of attention or suffering embarrassment in social situations...	no	yes
		b	The patient's anxiety has been excessive or unfounded...	no	yes
		c	The patient avoids this kind of situations or finds them difficult to endure while they last...	no	yes
		d	This has had an adverse effect upon the patient's professional or social functioning or causes considerable distress to the patient...	no	yes

If F1a, F1b, F1c, F1d are true for the patient (yes), then the patient is diagnosed with social phobia.

Stuttering is a phenomenon frequently occurring in the course of social phobia, which is evident from the fact that logophobia is included in the most commonly-used social anxiety scale – LSAS (Liebowitz Social Anxiety Scale) (Liebowitz, 1987).

From the medical perspective, stuttering is defined mainly on the basis of a qualitative description of the symptoms of dysfluency (DSM-5). According to DSM-5, the diagnostic criteria of stuttering are as follows:

- a) Disturbances in the normal fluency and prosody of speech, characterized by at least one of the following symptoms:
 1. Sound and syllable repetitions
 2. Sound prolongations
 3. Interjections
 4. Pauses within a word
 5. Filled (vocalized) or unfilled (silent) pauses in speech
 6. Word substitutions to avoid challenging words
 7. Words formed with excessive physical tension
 8. Monosyllabic whole-word repetitions
- b) The disturbances in speech hinder communication in academic, professional and social contexts

PSYCHOPHARMACOLOGICAL TREATMENT OF SOCIAL PHOBIA

The pharmacological treatment of social anxiety disorder consists in reducing psychological distress and avoidance as the dominant symptoms of the disorder. Some of the medications prescribed for social anxiety disorder are administered as supportive treatment, especially of the physical symptoms of anxiety, particularly tachycardia.

Current research into the role of specific neurotransmitters in the pathogenesis of social phobia constitutes the basis for biological therapy of the disorder. Numerous studies show that social phobia is associated with the dysfunction of dopaminergic, serotonergic, adrenergic and GABAergic systems (Nutt, Ballenger, 2007). The present possibilities of treatment of social phobia are based on influencing the receptors of these neurotransmitters.

Non-selective irreversible monoamine oxidase inhibitors (MAOIs)

The observations on the use of MAOIs, or medications blocking the metabolism of serotonin, dopamine and noradrenaline, come from studies on the treatment of atypical depression, in which the symptoms of depression often coexisted with anxiety symptoms similar to phobias, including social phobia. In the key study by Liebowitz and colleagues, 85 randomly chosen patients underwent an eight-week treatment with either phenelzine (MAOI), or atenolol, or placebo. Mean doses of medication were: phenelzine – 75.7 mg/day (SD = 16, range = 45–90 mg/day);

atenolol – 97.6 mg/day (SD = 10.9, range = 50–100 mg/day). Response rates, defined as a Clinical Global Impression Clinic Improvement (CGI-I) > 1 were: phenelzine 64%; atenolol 30%, and placebo 23%. A significant reduction in social anxiety as well as improvement in efficiency were observed in the patients treated with phenelzine rather than atenolol or placebo (Liebowitz et al., 1988). In another study into the use of MAOI phenelzine, 128 patients were randomly assigned to groups treated with phenelzine, receiving cognitive-behavioral therapy (CBT), undergoing a combination treatment of CBT and phenelzine, or given placebo. The most significant improvement was observed among the patients simultaneously receiving phenelzine and CBT, followed by the patients treated with phenelzine monotherapy (Blanco et al., 2010). One should also mention the first study on treating social phobia with medications from this group. 32 patients suffering from social anxiety disorder were treated with another MAOI, tranylcypromine, for a period of up to a year. Out of the 29 patients who completed at least a month of the treatment, 62% showed improvement, 17% – moderate improvement and 21% – no improvement at all (Versiani et al., 1988).

The use of MAOIs is associated with dietary limitations and the risk of significant interactions with other medications; this led to the introduction of another group of medicines, namely reversible inhibitors of monoamine oxidase A (RIMAs), whose mechanism of action is similar to that of MAOIs.

Reversible inhibitors of monoamine oxidase A (RIMAs)

In a major multicentre study, Katschnig et al. (1997) compared two doses of moclobemide (300 and 600 mg) with placebo in a double-blind trial within a period of 12 weeks. Both doses of moclobemide proved more effective than placebo (Katschnig et al., 1997). In another study, the use of the mean dose of 728 mg of moclobemide per day brought only a slight improvement among 77 patients suffering from social phobia (Schneier et al., 1998). In yet another study into the effects of using moclobemide in the treatment of social phobia, in a group of 390 patients, 43% of those treated with moclobemide showed improvement in comparison with 31% of those given placebo (Stein et al., 2002a). Moclobemide is definitely better tolerated than MAOIs, but its effectiveness seems to be slightly lower in comparison with the classic MAOIs.

Selective serotonin reuptake inhibitors (SSRIs)

Selective serotonergic medications, whose mechanism of action is based on limiting the reabsorption of serotonin or selective serotonin reuptake inhibitors (SSRIs), currently seem to be a standard pharmacological treatment of social pho-

bia, which has been confirmed by clinical studies and meta-analyses based on them. SSRIs are, however, a heterogeneous group in terms of pharmacodynamics, which is why it is advisable to consider clinical research into specific medications from this group rather than discuss the effects of the whole group.

Investigations on the use of paroxetine constitute a considerable part of studies with the use of SSRIs. In a classic study, the effects of administering from 20 to 50 mg of paroxetine daily were compared to the effects of placebo. In a twelve-week period, a major improvement (CGI-I 1-2) was observed in 55% of the patients treated with paroxetine in comparison to 24% of the patients given placebo who showed the same level of improvement (Stein et al., 1998). In a long-term study (24 weeks), relapse was observed to be statistically rarer among the patients treated with paroxetine than among the patients receiving placebo (Stein et al., 2002b). In one of the most recent studies on the treatment of social phobia with paroxetine, in a six-month period the highest remission rate was observed in the subgroup given CBT only, a lower remission rate was seen in the subgroup given CBT and paroxetine, while monotherapy with paroxetine resulted in remission in only 27% of the sufferers (Nordahl et al., 2016).

In a 20-week placebo-controlled study into the efficacy of sertraline in the treatment of social phobia, positive response was observed in 53% of the patients treated with sertraline and 29% of the patients given placebo (Van Ameringen et al., 2001). In another study, in which the effects of a 12-week treatment were measured against LSAS and CGI, it was found that the patients treated with sertraline showed greater improvement (47%) in comparison with those given placebo (26%) (Liebowitz et al., 2003). In the most recent study, in which the efficacy of sertraline in the treatment of social phobia was compared to the effects of short-term psychodynamic therapy, both forms of treatment proved highly effective (Nader-Mohamadi et al., 2015).

An interesting placebo-controlled study compared the efficacy of treating social phobia with different doses (5 mg and 20 mg) of escitalopram, the most selective of SSRIs and with paroxetine, another medication from the same group, in a clinical 24-week trial. Within the first 12 weeks of treatment, both doses of escitalopram proved efficacious in comparison with placebo; next, escitalopram was shown to have clinical advantage over paroxetine from the 16th week of treatment onwards (Lader et al., 2004). In another study into the use of escitalopram, it was found that in a 24-week trial the risk of relapse of social phobia among the patients treated with escitalopram (10–20 mg) was significantly lower (22%) in comparison with the patients on placebo (Montgomery et al., 2005). In one of the most recent studies it was shown that the reduction in the symptoms of social anxiety after only a week of treatment with escitalopram is a valid predictor of further improvement in the functioning of SAD sufferers (Oh et al., 2016). The newest

meta-analysis confirmed the efficacy of escitalopram and its clinical advantage over placebo in the treatment of social anxiety, regardless of the dose (5–20 mg) (Baldwin et al., 2016).

In one of the few studies concerning fluvoxamine it was shown that it was more efficacious than placebo in the treatment of various aspects of social phobia in a 12-week trial (Westenberg et al., 2004).

In a placebo-controlled study comparing the efficacy of treating social phobia with fluoxetine, with CBT and with the combination treatment of fluoxetine and CBT, it was found that both fluoxetine, CBT and the combination treatment (fluoxetine and CBT) produced improvement in ca. 50% of the patients while placebo resulted in improvement in ca. 30% of the sufferers (Davidson et al., 2004).

Selective serotonin–norepinephrine reuptake inhibitors (SNRIs)

Due to the mechanism of the emergence of social phobia, which appears to be connected with serotonergic and noradrenergic deficits, it could be expected that medications from the group of SNRIs, especially venlafaxine and duloxetine, should be efficacious in the comprehensive treatment of social anxiety disorder. Two major randomized studies confirmed the efficacy of venlafaxine in the treatment of social anxiety disorder (Liebowitz et al., 2005; Stein et al., 2005). The most interesting observation comes from the second of these studies, in which, in a 28-week trial, venlafaxine was proved to have a significant clinical advantage over placebo as far as remission was concerned (31% vs. 16%), regardless of the daily dose of venlafaxine (the administered doses ranged from 75 mg/day to 225 mg/day) (Stein et al., 2005).

The other commonly-used SNRI, duloxetine, was shown to produce a significantly greater reduction in the symptoms of social phobia as measured against LSAS in both short-term treatment (6 weeks) and long-term treatment (24 weeks) in a study conducted by Simon et al. (2010).

OTHER ANTIDEPRESSANTS

Other antidepressants, such as bupropion, reboxetine, mirtazapine or nefazodone, whose mechanisms of action are different, were not shown to be efficacious in the treatment of social phobia, which may indicate that social phobia can be treated with serotonergic and/or noradrenergic medications (Blanco et al., 2014).

Benzodiazepines

The use of benzodiazepines in the treatment of social phobia is based upon the fact that these anti-anxiety medications were earlier prescribed in the treatment of such anxiety disorders as generalized anxiety disorder or panic disorder. The high efficacy of the drugs unfortunately correlates with a serious risk of addiction, therefore, the information about their use in the treatment of social phobia is only provided here out of our sense of duty as authors.

Thus, in three trials, alprazolam (daily doses of 1–8 mg) did produce an anti-anxiety effect but it was weaker than expected; in the final study quoted here it amounted to 38% (the patients rated as responders to 12-week treatment) (Lydiard et al., 1988; Reich, Yates, 1988; Gelernter et al., 1991).

On the other hand, the treatment with another benzodiazepine, clonazepam, provided much better results in comparison with alprazolam (Davidson et al., 1993; Ontiveros, 2008).

Beta-blockers

Beta-blockers, such as atenolol, are used owing to their symptomatic effect, i.e. a reduction in outward signs of anxiety, like tremors or tachycardia (Liebowitz et al. 1992).

One study, which compared the efficacy of atenolol, behavior therapy and placebo, showed that behavior therapy produced significantly better results (89% of the patients exhibited improvement in a 12-week trial) in comparison with the treatment with atenolol (improvement in 47% of the patients) and with placebo (improvement in 44% of the patients) (Turner et al., 1994). Propranolol, a non-selective beta-blocker, proved considerably more efficacious (Schneier, 1995).

Other psychotropic medications

There are relatively numerous reports about anticonvulsants having a therapeutic effect on the symptoms of social phobia, since anti-seizure medications influence GABA receptors. Gabapentin and pregabalin produce particularly encouraging results (Blanco et al., 2014). The anxiolytic effect of gabapentin in social phobia was shown in a meta-analysis study (Chouinard, 2006). As far as pregabalin is concerned, its efficacy for preventing relapse of social phobia was proved in a long-term placebo-controlled study (Greist et al., 2011). Trials of other medicines (D-cycloserine, antipsychotics) require further study (Blanco et al., 2014).

The results of one of the most recent meta-analyses indicate that the following types of pharmacotherapy of social phobia have a statistically significant

advantage in comparison with the non-treated group (waitlist); they are ranked from the greatest to the smallest effect size: 1. monoamine oxidase inhibitors (phenelzine and moclobemide), 2. benzodiazepines (clonazepam has the greatest effect size), 3. SSRIs and SNRIs (paroxetine and venlafaxine have the greatest effect size), 4. anticonvulsants (gabapentin has the greatest effect size). (Mayo-Wilson et al., 2014).

The treatment of social phobia usually consists in combining a psychotropic medication, usually an antidepressant, with various forms of psychotherapy and speech-language therapy.

THE TREATMENT OF SOCIAL PHOBIA IN CHILDREN AND ADOLESCENTS

Studies in which medications and/or placebo are used encounter considerable methodological and ethical difficulties when it comes to children and adolescents; at the same time, it should be remembered that symptoms of social phobia are not as frequently observed among adults as among children and adolescents, in whose case the disorder often takes the form of school phobia. Therefore, the number of studies in which psychotropic medicines were used in the treatment of social phobia in children and adolescents is significantly smaller than the number of studies with adults as subjects.

Thus, in a study in which the effects of treatment with fluoxetine (daily doses of up to 40 mg in the case of children and up to 80 mg in the case of adolescents) were tested, it was observed that eight out of ten patients responded to treatment although earlier they had not responded to psychotherapy (Fairbanks et al., 1997). Similarly good results of treatment of social phobia in children ($n = 22$) were found in a 9-week clinical study on sertraline (daily dose of up to 50 mg) (Rynn et al., 2001). In a placebo-controlled clinical study on escitalopram (a 12-week trial, $n = 20$, ages 10–17), as many as 65% of the patients treated with the medication responded well to treatment (Isolan et al., 2007). Meta-analysis of the use of SSRI and SNRI antidepressants indicates that as many as two-thirds of children and adolescents suffering from social phobia respond well to treatment (Blanco et al., 2014). In another meta-analysis of the efficacy of antidepressants in children and adolescents with social phobia, its author shows that the only medications whose effectiveness has been proved are venlafaxine, fluoxetine, and fluvoxamine (Gentile, 2014). The most recent review article emphasizes the efficacy of SSRI and SNRI antidepressants, but also the usefulness of combining this kind of biological therapy with psychotherapy, especially CBT (Hussain et al., 2016).

CONCLUSIONS

In conclusion, it can be stated that:

- a) Social phobia is a phenomenon often coexisting with speech fluency disorders, especially stuttering, which is manifested mainly in the occurrence of logophobia.
- b) The treatment of social phobia in people who stutter, through reducing the mechanism of avoidance, is also a biological therapy of stuttering.
- c) The use of either SSRI, MAOI, RIMA and SNRI antidepressants or anti-convulsants, especially gabapentin and pregabalin, is still the main trend in the pharmacotherapy of social phobia.

The authors' own experience indicates that combining biological therapy with speech-language therapy is efficacious in the treatment of adult social phobia sufferers who stutter.

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