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Literature Search Results

Search request date: 17th June 2014
Search completion date: 19th June 2014
Search completed by: Alison Price

Enquiry Details

Medicine management/ treatment for stammering/ stuttering.

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Select Edit from the menu, the Find and type in your term in the search box which is presented. The search function will locate the first use of the term in the document. By pressing ‘next’ you will jump to further references.
Journal of Clinical Psychopharmacology, December 2011, vol./is. 31/6(740-4)

Abstract: Stuttering affects approximately 5% of children up to the teenage years. There are many possible forms of intervention, one of which is pharmacotherapy. No review about the treatment of stuttering with pharmacological agents in children and adolescents has been undertaken. The objectives of this review were to determine the extent of previous research in this area and to assess the success of pharmacological agents in reducing the frequency of disfluency in child and adolescent stutterers (<18 years). A systematic search of MEDLINE, PsychInfo, Embase, and Cochrane Systematic Review databases was carried out to identify potential studies for the review. Studies that met specified criteria were selected for detailed examination, and the quality of evidence they provided was assessed according to 7 criteria that pertained to study design and data provision. Seven publications met the inclusion criteria for the review. Only 1 publication was classified as strong evidence quality, and this reported that clonidine did not reduce the frequency of disfluency in a group of 25 individuals who stuttered. All further publications were classified as either very low or low evidence quality. The agents examined were risperidone, olanzapine, clonidine, tiapride, haloperidol, and chlorpromazine.

This review is commented on below:

Pharmacologic treatment for stuttering.
Brown University Child & Adolescent Psychopharmacology Update, 01 December 2011, vol./is. 13/12(7-7), 15278395

Based on a systematic review of pharmacologic agents for treating stuttering in children and adolescents, the authors concluded that no pharmacologic agent could be recommended as a potential treatment for stuttering in pediatric patients. The review was based on 7 studies meeting specified criteria for analysis relating to study design and data provision, investigating olanzapine, risperidone, haloperidol, chlorpromazine, clonidine, and tiapride.

The only study that provided strong evidence found that clonidine did not reduce disfluency in a group of 25 youth who stuttered. The conclusion reached in the current review is similar to that reached by Bothe et al. (2006) for adult stutterers, and extends the finding to children and adolescents. Many agents tested in adult stutterers (carbamazepine, paroxetine, sertraline, the tricyclics clomipramine and desipramine, calcium channel blockers, and beta-blockers) have yet to be tested in children and adolescents. The anxiolytic pagoclone which has been studied in adult stuttering, and other drugs which are already being used regularly in children (e.g., carbamazepine) could be areas of future investigation in young patients who stutter. [Boyd A, et al.: J Clin Psychopharmacol 2011; 31(6):740–744.]

Abstract: PURPOSE: To complete a systematic review, incorporating trial quality assessment, of published research about pharmacological treatments for stuttering. Goals included the identification of treatment recommendations and research needs based on the available high-quality evidence. METHOD: Multiple readers reviewed 31 articles published between 1970 and 2005, using a written data extraction instrument developed as a synthesis of existing standards and recommendations. Articles were then assessed using 5 methodological criteria and 4 outcomes criteria, also developed from previously published recommendations. RESULTS: None of the 31 articles met more than 3 of the 5 methodological criteria (M = 1.74). Four articles provided data to support a claim of short-term improvement in social, emotional, or cognitive variables. One article provided data to show that stuttering frequency was reduced to less than 5%, and 4 additional articles provided data to show that stuttering may have been reduced by at least half. Among the articles that met the trial quality inclusion criterion for the second stage of this review, none provided uncomplicated positive reports. CONCLUSIONS: None of the pharmacological agents tested for stuttering have been shown in methodologically sound reports to improve stuttering frequency to below 5%, to reduce stuttering by at least half, or to improve relevant social, emotional, or cognitive variables. These findings raise questions about the logic supporting the continued use of current pharmacological agents for stuttering.

REQUEST FROM LKRS
This paper has been critically appraised by the NHS Centre for Reviews and Dissemination:

CRD summary
This review concluded that some non-pharmacological therapies may help patients to reduce stuttering and/or improve social, emotional or cognitive variables. The authors’ conclusions are in line with the evidence presented, but should be treated with caution in view of the small sample sizes and non-comparative design of many of the included studies.

CRD commentary
This review addressed a clear question and had clear inclusion criteria for the participants and interventions. Inclusion criteria for the outcomes were broad and it appears that all types of study design were eligible. The authors searched a range of relevant sources, although the search was restricted to English language material and some relevant studies could therefore have been missed. Unpublished studies were not sought and publication bias was not assessed, so the review could be at risk of publication bias. Study quality was assessed and the results were used in the synthesis. It appears that appropriate methods were used to minimise errors and bias during the review process. Limited details of the included studies were reported. A narrative synthesis was presented, which seems appropriate given the variety of included interventions and study designs. The authors’ conclusions are in line with the evidence presented, but should be treated with caution in view of the small sample sizes and non-comparative design of many of the included studies.

Implications of the review for practice and research
Practice: The authors stated that response-contingent principles were the predominant feature of the most powerful interventions for young children with stuttering. The most powerful interventions for adults appear to combine variants of prolonged speech, self-management, response contingencies and other variables.

www.crd.york.ac.uk/crdweb/ShowRecord.asp?LinkFrom=OAI&ID=12007005256
The paper has also been commented upon in print:
American Journal of Speech-Language Pathology, 2008, 17/1(93-7; author reply 98-101)
Meline T, Harn WE


METHOD: A. D. Oxman and G. H. Guyatt's (1988) guidelines for reading literature reviews and A. D. Oxman and G. H. Guyatt's (1991) criteria for assessing the scientific quality of systematic reviews were adopted to accomplish the purpose.

RESULTS: Bothe et al.'s review was rated on a 7-point scale from extensive flaws on the high end to minimal flaws on the low end of the scale. The ratings varied from poor to good.

CONCLUSIONS: We judged Bothe et al.'s review of the pharmacological literature as it pertains to stuttering as flawed in its methodology and conclusions. However, we agree that the existing evidence for the use of pharmacological agents with persons who stutter is insufficient to recommend them in practice. Directions for improving the quality of clinical trials are suggested. In addition, we advocate for the multimethod measurement in stuttering research, including comparison, subjective evaluation, and social impact measures.

Publication Type: Comment, Letter
Full Text: Available from EBSCOhost in American Journal of Speech-Language Pathology

American Journal of Speech-Language Pathology, 01 February 2008, vol./is. 17/1(98-101)
Bothe AK, Franic DM, Ingham RJ, Davidow JH


METHOD: Additional information is provided to address several issues raised by Meline and Harn. Results and Conclusions Our previous systematic review omitted 1 relevant article about the use of olanzapine in stuttering, but the minimal effectiveness and the known serious side effects of this drug limit the implications of this omission. While we do not agree with many of Meline and Harn's critiques of our review, we do agree with them that several larger points raise interesting questions about the structure, analysis, and usefulness of literature reviews in stuttering and in other areas. Fundamentally, we reassert our agreement with Meline and Harn that there is insufficient evidence to support the use of existing pharmacological agents in the treatment of stuttering.

Literature Reviews

**Risperidone: Stuttering** Generali J.A., Cada D.J.
Hospital Pharmacy, March 2014, vol./is. 49/3(242-243)

**Abstract:** This Hospital Pharmacy feature is extracted from Off-Label Drug Facts, a publication available from Wolters Kluwer Health. Off-Label Drug Facts is a practitioner-oriented resource for information about specific drug uses that are unapproved by the US Food and Drug Administration. This new guide to the literature enables the health care professional or clinician to quickly identify published studies on off-label uses and determine if a specific use is rational in a patient care scenario. References direct the reader to the full literature for more comprehensive information before patient care decisions are made.


**Overview of the diagnosis and treatment of stuttering.** Maguire G.A., Yeh C.Y., Ito B.S.
Journal of Experimental and Clinical Medicine, April 2012, vol./is. 4/2(92-97)

**Abstract:** Stuttering is a speech disorder defined by frequent prolongations, repetitions, or blocks of spoken sounds and/or syllables, as well as anxiety and cognitive avoidance. Stuttering is a very common disorder, and research now indicates that it is likely a multifactorial process with a physiologic etiology. Recent advances in the field of stuttering now provide insight into novel treatment strategies to help guide the practicing clinician. In addition to considering the upcoming revision to the Diagnostic and Statistical Manual of Mental Disorders criteria, comprehensive treatment should address all aspects of this disorder, as the optimal treatment of stuttering involves a multidisciplinary approach. 2012.

**The aetiology and treatment of developmental stammering in childhood**
Archives of Disease in Childhood, January 2008, vol./is. 93/1(68-71). Ward D.

**Extract:**
There is tentative evidence that the D2 antagonist, risperidone can be helpful in reducing the severity of stammering in some adults. However, the use of a range of drugs to treat adult stammering is controversial, and drug treatments are not recommended for children

**Full Text:** Available from National Library of Medicine in Archives of Disease in Childhood

**Pharmacologic treatment of stuttering: Evidences and controversies** [Portuguese]
Tratamento farmacologico da gagueira: Evidencias e controversias
Jornal Brasileiro de Psiquiatria, 2006, vol./is. 55/3(244-248), 0047-2085 (2006)
Vila-Nova C., Queiros F., Fortaleza T., Lucena R.

**Language:** Portuguese

**Abstract:** Objective: This article analyzes the pharmacologic treatment of stuttering, assessing the effectiveness of different treatments using psychiatric drugs and further evidences of other drugs in the treatment of this disorder. Methods: Search in Medline database, using the terms stuttering treatment, disfluency, disfluency treatments, botulinum toxin and stuttering treatment, botulinum toxin and disfluency treatment. Results: Studies involving the following drugs were found: citalopram + clomipramine, desipramine, paroxetine, olanzapine, pimozide, risperidone, tiapride, levetiracetam, divalproex sodium, citalopram + alprazolam, clonidine and bethanechol, as well as clinical trials with the botulinum toxin A and anesthetics.
Studies with citalopram + clomipramine, paroxetine, olanzapine, citalopram +
alprazolam, risperidone, clomipramine and desipramine, levetiracetam, divalproex
sodium, lidocaine and botulinum toxin A showed positive results. However, the great
majority of pharmacological studies in this area are case series or clinical trials with
small samples.
Conclusion: Enough evidences do not exist that justify the use of a specific treatment for
stuttering. The presented studies indicate the necessity of accomplishment of more
double-blind placebo-controlled trials involving larger samples.

**Alleviating stuttering with pharmacological interventions** Maguire G.A., Yu B.P.,
Expert Opinion on Pharmacotherapy, July 2004, vol./is. 5/7(1565-1571)

**Abstract:** Stuttering is a speech disorder characterised by frequent prolongations,
repetitions or blocks of spoken sounds and/or syllables. Stuttering is very common and
is classified by the Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition
(DSM-IV) as an Axis I disorder. In spite of this, stuttering treatment is sporadically
addressed by a practicing physician, especially in the US. Much has recently been
learned of the neurophysiological basis of this disorder, which has provided insight into
novel treatment strategies, thus helping to guide the practising clinician. Stuttering is
likely to be associated, at least in part, to dopamine hyperactivity in the brain. Novel
dopamine antagonists such as risperidone and olanzapine, have recently been shown to
improve the symptoms of stuttering providing a strong foundation for physicians to more
effectively treat this disorder.

**Randomised Controlled Trials**

**Olanzapine Versus Haloperidol: Which Can Control Stuttering Better?**
Vahid Shaygannejad, Seyed Ahmadreza Khatoonabadi,1 Bijan Shafiei,2 Majid Ghasemi,
Background: The aim of this study was to compare the effects of olanzapine versus
haloperidol to control the signs and symptoms of stuttering.
Methods: Ninety-three patients were recruited in a 12-week single-blind randomized
clinical trial, which was held between October 2009 and October 2010. Forty-three
patients received olanzapine (5 mg/day) and 50 patients, haloperidol (2.5 mg/day).
Before and after the study, they were evaluated by a speech pathologist by Van Riper's
questionnaire. The data were analyzed using the SPSS version 16. T-test was used to
compare the data between the two groups.
Results: Mean of stuttering score (SD) before treatment was 4.67 (0.81) and 4.40 (1.14)
in haloperidol and olanzapine groups, respectively (P > 0.05). After treatment, the mean
(SD) score was 2.87 (1.32) and 1.56 (0.71) in haloperidol and olanzapine groups,
respectively (P = 0.00).
Conclusions: It seems that olanzapine does have better impact in controlling stuttering,
and it may be recommended to prescribe olanzapine for stutters as the first choice to
control the stuttering under a careful follow-up.
Exploratory randomized clinical study of pagoclone in persistent developmental stuttering: The examining pagoclone for persistent developmental stuttering study
Journal of Clinical Psychopharmacology, February 2010, vol./is. 30/1(48-56)
Maguire G., Franklin D., Vatakis N.G.
Abstract: INTRODUCTION: Stuttering is a speech disorder in which the flow of speech is disrupted by repetitions, prolongation, and blocks of sounds, syllables, or words. No pharmacological treatments are approved for use in stuttering, and the most common form of treatment is speech therapy. This study was designed to assess the safety, tolerability, and effectiveness of pagoclone during 8 weeks of double-blind treatment followed by a 1-year open-label extension in patients who stutter. METHODS: An 8-week, multicenter, parallel-group, 2-arm, randomized (ratio 2:1 pagoclone-placebo), double-blind study with a 1-year open-label extension conducted at 16 US centers, including men and women aged 18 to 65 years who developed stuttering before 8 years of age. Twice-daily dosing with pagoclone (n = 88 patients) or matching placebo (n = 44 patients), with primary and secondary efficacy variables defined a priori, including Stuttering Severity Instrument Version 3 outcomes, clinician global impressions of improvement, and the change in the percentage of syllables stuttered. RESULTS: Pagoclone produced an average 19.4% reduction in percentage of syllables stuttered compared with 5.1% reduction for placebo. During open-label treatment, a 40% reduction in the percent syllables stuttered was observed after 1 year of treatment with pagoclone. The most commonly reported adverse event during double-blind treatment was headache (12.5% pagoclone patients, 6.8% placebo patients). DISCUSSION: Pagoclone was effective in reducing symptoms of stuttering and was well tolerated. In light of its favorable tolerability profile, as well as consistency of effects across multiple efficacy variables, pagoclone may have potential as a pharmacological treatment of stuttering. LIMITATIONS: The main limitation of this study was the adequacy of the number of subjects who participated because this study was conducted as a pilot investigation. Furthermore, as this condition waxes and wanes, the assessment of stuttering within the clinic setting may not be an adequate reflection of the stuttering of the patients within the community. 2010 by Lippincott Williams & Wilkins.

Treatment with medications affecting dopaminergic and serotonergic mechanisms: Effects on fluency and anxiety in persons who stutter
Stager S.V., Calis K., Grothe D., Bloch M., Berensen N.M., Smith P.J., Braun A.
Abstract: Medications with dopamine antagonist properties, such as haloperidol, and those with serotonin reuptake inhibitor properties, such as clomipramine, have been shown to improve fluency. To examine the degree to which each of these two pharmacological mechanisms might independently affect fluency, a selective serotonin reuptake inhibitor, paroxetine, and a selective dopamine (D-2) antagonist, pimozide, were evaluated. Both types of medications also affect mood and anxiety, factors that could influence fluency levels. Therefore, we also evaluated the medications’ effects on generalized and speech-related anxiety and the relationships between changes in anxiety and changes in fluency in 11 subjects with a history of developmental stuttering.
The randomized, double blind, placebo-controlled crossover study that was designed had to be terminated prior to completion due to severe side effects following withdrawal from paroxetine. Even with a reduced sample size (n = 6), significant improvement in percent fluent speaking time (p = 0.02) was found using a telephone task between baseline and pimozide (n = 6), with average duration of dysfluencies significantly shorter (p = 0.04) but no significant difference in the estimated number of dysfluencies per minute. This significant improvement was associated with non-significant increases in generalized anxiety, but non-significant decreases in speech-related anxiety. No significant differences were found in fluency between baseline and paroxetine (n = 5). These preliminary results suggest that fluency improvement is more likely to be mediated by dopaminergic rather than serotonergic mechanisms. Due to its side effects, however, pimozide may be considered a risk for treatment of stuttering.

Educational objectives: As a result of reading this paper the reader will describe and explain: (1) how medications may affect fluency and the rationale for selecting medications for treatment trials; (2) the interrelationship between fluency and anxiety; and (3) factors important in developing clinical trials using medications.


Abstract: Stuttering is a speech disorder that affects one-percent of all adults and much has been learned recently of its neurologic correlates. Stuttering has been associated with excessive cerebral activity of the neurotransmitter, dopamine. Pharmacologic research has suggested that older generation dopamine antagonist (i.e. "typical antipsychotic") medications improve stuttering symptoms, but are associated with poorly tolerated adverse effects. The purpose of this study was to compare the efficacy and tolerability of olanzapine, a novel dopamine antagonist (or "atypical antipsychotic"), versus placebo in the treatment of adult developmental stuttering. Twenty-four adults who stutter participated in a twelve-week, randomized, double-blind, placebo-controlled trial conducted at two separate sites. Subjects received either olanzapine (2.5 mg titrated to 5 mg) or matching placebo. Subjects were rated on an objective measure of stuttering severity (SSI-3), a clinician based global impression (CGI), and a subject-rated self-assessment of stuttering (SSS). Subjects were also monitored for potential side-effects. Twenty-three of the twenty-four subjects enrolled in the trial successfully completed the full course of the study. Olanzapine was statistically superior to placebo on the three ratings of stuttering severity, the SSI-3, the CGI and SSS (p >.05). Olanzapine is a promising medication for the treatment of stuttering and further research is warranted.


Abstract: A randomized, double-blind, placebo-controlled study was conducted to assess the efficacy of risperidone in the treatment of developmental stuttering in 16 adults. Eight subjects received placebo and eight received risperidone at 0.5 mg once daily at night, increased to a maximum of 2 mg/day. After 6 weeks of treatment, decreases in all measures of stuttering severity were greater in the risperidone group than in the placebo group; the between-treatment difference was significant (p < 0.05) on the most important measure, the percentage of syllables stuttered. In the risperidone group, reductions from baseline in scores for the percentage of syllables stuttered, time stuttering as a percentage of total time speaking, and overall stuttering severity were significant (p < 0.01); changes in scores on the fourth measure of stuttering, duration,
were not significant. No significant decreases occurred in the placebo group. Among the eight patients in the risperidone group, five responded best to 0.5 mg/day, with stuttering recurring at higher doses. The remaining three patients responded better with increasing doses of risperidone. Risperidone was generally well tolerated. The results of this small study indicate that risperidone may be effective in the treatment of developmental stuttering. This finding needs to be confirmed in a larger trial.

**Clinical Trials**

**Use of formoterol in the treatment of stuttering. A pilot study**
Biomedical Papers, 2009, vol./is. 153/3(199-203), 1213-8118;1213-8118 (2009)
Pesak C., Zapletalova J., Grezl T.

**Abstract:** Aims: Stuttering is a serious health and social problem that can distinctively affect not only the mental development of an individual but also his life possibilities, including social fulfilment and his general life prospects. The etiology of stuttering is however unknown and that is why it is not possible to treat it causally. This pilot study takes into account the hypothesis of bronchial constriction as a negative factor in stuttering and investigates the effect of the long-acting bronchodilator formoterol fumarate on stuttering in 42 patients. Methods: Patients were divided in 2 groups - A (school children and juveniles) and B (adults 18-25 resistant to other treatment). The medicine was administered once a day in the morning in a dose of 12 mug for the total period of 6 months. The prime outcome parameter - severity of stuttering - was evaluated using the ordinary scale (McGill Pain Questionnaire). The evaluation was done by an examining physician during visits to the centres and by the patients themselves (in cases of the youngest with the assistance of a parent) in a daily diary. Results: A non-parametric pair test (Wilcoxon signed rank test) was used to compare the average marks in the whole set of patients. During the six moth period of administration of Foradil the speech fluency improved. The average number of dysfluent words decreased from 10.5 + 1.3 to 6.6 +0.97.

Conclusion: The average mark of speech fluency evaluated by the physicians between the period of non use of Foradil and the six month period after the use of Foradil improved from 2.95 + 0.76 to 1.95 + 0.56 (as proved by the chi-square test, p<0.0001). The evaluation of speech fluency of balbuties uses the logopedic practices. Other clinical evaluations of speech fluency are not known.
Stuttering: neuropsychiatric features measured by content analysis of speech and the effect of risperidone on stuttering severity.
Comprehensive Psychiatry, July 1999, vol./is. 40/4(308-14)
Maguire GA, Gottschalk LA, Riley GD, Franklin DL, Bechtel RJ, Ashurst J

Abstract: Positron-emission tomographic (PET) studies and genetic research of stuttering have recently revealed underlying cerebral neurobiologic contributing factors in this disorder. We aimed to assess whether cognitive impairment and other neuropsychiatric dimensions could be detected through computerized content analysis of short samples of speech from stutterers, and whether administration of risperidone in a double-blind placebo-controlled study could decrease the severity of stuttering, as well as any of the neuropsychiatric features of these stutterers. A group of 21 stutterers with the developmental form of stuttering, an onset before age of 6 years, aged 20 to 74 years, and who were otherwise free of major medical or psychiatric problems, initially gave a 5-minute tape-recorded speech sample in response to purposely ambiguous instructions to talk about any interesting or dramatic life experiences. Then, half of these subjects (n = 10) were randomly selected to receive 6 weeks of risperidone treatment up to 2.0 mg/d and the other half (n = 11) were administered a placebo. Both groups of subjects gave a second verbal sample after 6 weeks of treatment. Significantly elevated cognitive impairment and social alienation-personal disorganization scores, derived from the computerized content of the initial 5-minute speech samples, were found. After 6 weeks, the risperidone group improved significantly on a measure of severity of stuttering but did not improve on the percentage of time spent stuttering. The placebo group did not improve on either measure of stuttering. The psychopathological processes of subjects who received risperidone treatment, including those with elevated cognitive impairment and social alienation-personal disorganization, did not change significantly. However, stutterers who had lower scores on verbal content analysis-derived shame anxiety, guilt anxiety, or hostility inward measures improved significantly more with risperidone than stutterers with higher scores on these measures. The findings of elevated cognitive impairment and social alienation-personal disorganization scores of adult stutterers with the early developmental form of stuttering are consistent with the neurobiologic abnormalities found in PET-scan and genetic research involving stutterers. Risperidone (< or =2.0 mg/d) can reduce the severity of stuttering while not significantly affecting the magnitude of neuropsychiatric dimensions such as cognitive impairment or social alienation-personal disorganization. The less the inward shame, guilt, or hostility of the stutterers, the better the beneficial effect of risperidone on the severity of stuttering.
Methylphenidate as a treatment for stuttering: a case report

Devroey D., Beerens G., Van De Vijver E. European review for medical and pharmacological sciences, 2012, 6 Suppl 4/(66-69)

Abstract: A randomized placebo controlled trial with methylphenidate (MPH) was set up to identify the effects of MPH on cognition in healthy young adults (ea. without attention deficit hyperactivity disorder, ADHD). Subjects repeatedly performed tests of the immediate and delayed memory and vigilance tasks after administration of placebo or 20 mg MPH. We report the case of an 18 year old man who participated in the study. He suffered from stuttering since childhood. During the study phase he reported a remarkable relief of the stuttering after the intake of 20 mg MPH. For D-amphetamine the beneficial effect on stuttering has been demonstrated but it was never implemented in clinical practice because of important adverse events. MPH, an amphetamine analogue, doesn't present these side effects. For this reason, MPH seems to merit further investigation in a randomized-controlled trial as a possible agent in the treatment of stuttering.

Stuttering treated with olanzapine: a case report.


Abstract: INTRODUCTION: Spasmophemia, also called stuttering or stammering, is a speech disorder characterized by impairment of the rhythm of words whose classical symptoms are blocks and repetitions.

METHODOLOGY: We describe the case of a male patient, his evolution and therapeutic strategies and review the current literature on the subject.

RESULTS: A 33-year-old patient was referred to our Mental Health Unit by his family doctor due to "speech problems and difficulty expressing ideas. His symptoms had worsened in recent weeks, with increase in his state of anxiety." Standing out in the consultation to the doctor, the patient experienced multiple blocks in expressing words, using circumlocutions and monosyllabic repetitions that made it very difficult to conduct the interview. Anticipatory anxiety and occasional obsessions of repeated checking also stand out. After six weeks of treatment with olanzapine 5 mg/daily, the patient showed significant improvement both in the fluency and anticipatory anxiety with decreased repetitions, blocking, interjections and broken words.

DISCUSSION: Spasmophemia has been associated with dopaminergic hyperactivity, so that studies have been conducted with atypical antipsychotics. Fundamentally, olanzapine and risperidone have revealed promising results. Furthermore, several studies have shown that these patients have higher rates of anxiety. That is why antidepressants and antianxiety drugs such as clomipramine, paroxetine, fluoxetine, citalopram, sertraline and alprazolam have been used.

CONCLUSION: Treatment with olanzapine, 5HT-2 and D1/ D2 antagonist, significantly improved the clinical picture as Boyd et al. have described in their systematic review.
Olanzapine for the treatment of acquired neurogenic stuttering
Journal of Psychiatric Practice, November 2009, vol./is. 15/6(484-488)
Catalano G., Robben D.L., Catalano M.C., Kahn D.A.
Abstract: Stuttering is a vocal phenomenon, which manifests itself as disturbances in speech fluency. While stuttering is most commonly treated with speech therapy and psychotherapy, a number of antipsychotic agents have been investigated as possible treatments. We present the case of a 37-year-old man who developed a post-concussive syndrome with psychosis and associated stuttering after his second exposure to a blast from an improvised explosive device (IED). After treatment with olanzapine, both his psychosis and his stuttering showed significant improvement. We also discuss stuttering and review previous studies that have investigated antipsychotic use in stuttering.

Investigating the efficacy of paroxetine in developmental stuttering
Clinical Neuropharmacology, July 2009, vol./is. 32/4(183-188)
Busan P., Battaglini P.P., Borelli M., Evaristo P., Monti F., Pelamatti G.
Abstract: Objectives:: Paroxetine has been reported to be useful for management of stuttering symptoms, but only a few reports have examined its effects. We have investigated the efficacy of paroxetine in a randomized, placebo-controlled study.
Methods:: Five stuttering subjects received paroxetine at 20 mg once daily at night for 12 weeks, and 5 received placebo. The percentages of stuttered words and stuttering-associated movements during speech were measured at baseline and after 6 and 12 weeks of treatment. Moreover, left primary motor cortex excitability was measured using transcranial magnetic stimulation. Specifically, resting and active motor thresholds and the cortical silent period (CSP) were obtained at the same periods in both groups.
Results:: Paroxetine did not affect the percentage of stuttered words between groups. Stuttering-associated movements, however, during speech in facial muscular districts were significantly reduced in subjects treated with paroxetine. Finally, paroxetine administration shortened the CSP with no effect on motor thresholds. Conclusion:: Paroxetine may be useful in qualitative management of stuttering symptoms and may act on the stuttering brain by diminution of intracortical inhibition, as revealed by the shortening of the CSP after paroxetine administration.

Fluoxetine for persistent developmental stuttering
Clinical Neuropharmacology, January 2007, vol./is. 30/1(58-59). Kumar A., Balan S.
Abstract: Stuttering is a disturbance in the normal fluency and time patterning of speech. Developmental stuttering (DS), with or without associated psychiatric illness, is the most common form and includes all cases with gradual onset in childhood that are not the result of acquired brain damage. Persistent developmental stuttering (PDS) is DS that has not undergone spontaneous or speech therapy-induced remission. Adults in speech therapy behavioral programs will often show regression and even total relapse if they stop practicing. This case report deals with a patient of PDS who responded significantly to treatment with fluoxetine.

Low-dose risperdone [sic] for stuttering. Brown University Child & Adolescent Psychopharmacology Update, 01 March 2006, vol./is. 8/3(8-8), 15278395
The article presents a case report of a four-year-old boy, with a family history of bipolar disorder, who was treated with risperidone. The treatment reduced the boy's tantrums within a week and stopped the stuttering just one day after initiating risperidone. With the continued success of the drug, treatment was discontinued after six months.
Full Text: Brown University Child & Adolescent Psychopharmacology Update