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Efficacy of bupropion in the treatment of pemoline dependence

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We present the case of a woman who requested psychiatric evaluation because she had been taking pemoline for six months at a dose between 100-150 mg/day, and was finding it difficult to discontinue taking this substance. Initiation of 300 mg/day of bupropion solved the patient's dependence problem. We propose using antidepressants such as bupropion for the treatment of addictive behaviors due to central nervous system stimulants.

Key words:
Bupropion. Substance abuse. Stimulants.

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Eficacia del bupropión en el tratamiento de la dependencia de pemolina

Presentamos el caso de una mujer que solicita evaluación psiquiátrica por llevar 6 meses consumiendo pemolina en unas dosis de entre 100 y 150 mg/día, encontrándose con dificultades para abandonar el consumo de dicha sustancia. La instauración de 300 mg/día de bupropión resuelve la dependencia que tenía la enferma. Proponemos el uso de antidepresivos como el bupropión para el tratamiento de conductas adictivas sobre estimulantes del sistema nervioso central.

Palabras clave:
Bupropión. Abuso de sustancias. Estimulantes.

INTRODUCTION

Pemoline is a central nervous system stimulant that has similar actions to amphetamines and methylphenidate, with minimum sympathetic-mimetic effects. Its long half-life makes it possible to use one dose a day. It may lead to a decrease in fatigue, increased motor activity and alertness level and decrease in appetite[1,2].

Pemoline, one of the drugs available for the treatment of attention-deficit hyperactivity disorder (ADHD) was approved by the FDA in 1975. The chemical structure of this drug is significantly different from other stimulants. It is believed that its action mechanisms similar to that of methylphenidate and dextroamphetamine[1-4]. Pemoline is mostly prescribed for patients who have an ineffective response or undesirable effects of methylphenidate and dextroamphetamine[2-4]. In some cases, the use of pemoline may have an addictive pattern. In this work, a case of abusive consumption of pemoline that was successfully treated by using bupropion is described.

CLINICAL CASE

Mrs. A is a 51 year-old woman who came to the psychiatry consultations because she had an abusive and recurrent consumption behavior of Dynamin® (a drug that contains per tablet 10 mg of pemoline and 5 mg of procaine, in addition to vitamin B_6-B_{12}, folic acid, serin, glutation and adenosine). This product is used in our country in cases of physical and/or psychic fatigue, which is why it had been prescribed to the patient 8 months earlier, with the recommendation of taking 1 tablet per day. However, the patient had been increasing the dose and had taken from 10 to 12 tablets of Dynamin® every morning for six months prior to the visit, sometimes repeating the same dose in the afternoons. The patient is defined as «a person with low tolerance to malaise» and with the need to find a «miraculous pill to relieve her exhaustion». After having taken these substances for half a year (she changed drugs several times so that her excessive consumption would not be detected), she found it difficult to stop taking the drug and had severe changes in her sleep-awakeness cycle in addition to sudden oscillations in her mood status (alternating episodes of sadness, dysphoria and hyperactivity). These symptoms led the patient to look for a medical solution. After psychiatric evaluation, she was prescribed 150 mg of bupropion at breakfast, changing this to 300 mg/day one week after she began the treat-

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ment (150 mg at breakfast and 150 mg at lunch), progressively reducing Dynamin® in three weeks.

After 6 weeks of treatment, the patient stopped consuming the abuse drug, reporting that she was emotionally better and did not need to seek drugs. The patient had good tolerance to the medication and rapidly became stabilized in her social-work area. Treatment with bupropion was maintained for 6 months with a gradual reduction to 150 mg/day during the last month of use. At one year, the patient continued to be stable and did not repeat the abusive behaviors of psychotropic substances.

DISCUSSION

Pemoline, a stimulant derived from oxazolidinone, is chemically different from other stimulants, including amphetamines, metaanphetamine and methylphenidate. This substance has been demonstrated to be effective in the treatment of ADHD[1-3,5,6]. Pemoline seems to induce changes in the central nervous system function similar to those observed with other stimulant drugs for ADHD, but with less sympathetic-memetic and cardiovascular effects[1,2]. Although the action mechanism of these drugs is unknown, it is believed that pemoline increases synaptic concentrations of dopamine and norepinephrine in the central nervous system in the same way as that observed with amphetamines. The pediatric dose of pemoline has not been well defined, but 18 to 112 mg per day orally have been administered to children between 5 and 12 years[3,7].

Our patient had been consuming a dosage between 100-500 mg of pemoline per day for six months, acquiring a typical pattern of dependence on central nervous system stimulants. As occurs in other studies, the initiation of treatment with bupropion has demonstrated the efficacy of this drug in patients who abuse psychostimulants[8], since, even though its action mechanism is not clear, it seems to be related with the dopaminergic system.

Our case also has a background of hyperactivity (probable ADHD in childhood with symptoms of this disorder in the adult stage), a disorder in which bupropion has also been shown to be effective as it increases synaptic dopamine and thus could correct/treat the deficits of ADHD associated dopaminergic transmission[8,9].

Our patient also had associated depressive symptoms, which would justify the use bupropion, since this drug has been shown to be effective in the treatment of depressive disorder, with a safe profile of side effects and with limited addictive potential[10].

All these factors would justify the clinical improvement experienced by our patient, it being complicated to evaluate up to what degree this improvement is due to each one of the previously mentioned effects.

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