



Impulse Control Problems Following Bariatric Surgery and Extrapryamidal Adverse Effects with Fluoxetine: A Case Report

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Abstract: Although bariatric surgery is an effective method used in the treatment of obesity today, many psychiatric difficulties are detected when patients are evaluated biopsychosocially during the pre-and postoperative periods. Especially when surgery is used in patients with eating disorders, different addiction problems and impulse control disorders may arise afterward. We present a clinical case of a patient with increased obsessive-compulsive symptoms, various impulsive control problems, and bulimia nervosa starting after bariatric surgery. Another feature that made this case interesting was the extrapyramidal adverse effects that occurred after fluoxetine treatment used for her psychiatric treatment. Our aim, thus, was to contribute to the literature by discussing psychiatric problems evolving after bariatric surgery and the rare adverse effect of fluoxetine.

Keywords: Bariatric surgery, Fluoxetine, Obesity, Sialorrhea, Trichotillomania, Obsessive compulsive disorder

1. INTRODUCTION

Although bariatric surgery is efficient for losing weight, it can bring different psychosocial difficulties.^{1,2} Some studies suggested that different addictions or impulse control disorders could emerge in patients after surgery.^{3,4} Conversely, some studies reported that cognitive functions improved after bariatric surgery and increased cognitive control corresponds with decreased impulsive symptoms.⁵

Selective serotonin reuptake inhibitors (SSRI) are used for the treatment of many psychiatric disorders such as mood disorders, anxiety disorders, obsessive-compulsive disorders, and eating disorders.⁶ and their effects and adverse effects are well known.⁷ Rarely, these well-known drugs can cause extrapyramidal symptoms (EPS).⁸ Among the SSRIs, paroxetine, sertraline, and fluoxetine have been reported for inducing EPS.⁹ When fluoxetine

is used with dopamine-blocking agents, the risk of developing EPS increases.¹⁰

In this case, we present a patient with new onset bulimia nervosa, worsening impulse control problems, and recurrence of her obsessive-compulsive disorder after bariatric surgery. In addition, we discuss the adverse effects of the treatment that was used for psychiatric diagnoses. We aimed to illustrate the importance of detailed evaluation of symptom profiles in different clinical conditions like bariatric surgery and rare possible adverse effects that may arise when using medications to treat them under these circumstances.

2. CASE REPORT

D.T., a 46-year-old married housewife, and mother of two children was admitted to our psychiatry outpatient clinic with the symptoms of worries about gaining weight, disliking her body, insom-

nia, irritability, skin picking-hair pulling, and having obsessions about symmetry and dirt-contamination.

In her psychiatric history, the patient presented to the hospital with symptoms such as anhedonia, and loss of interest, which started after her father's death in 2007. She was diagnosed as having major depression and was prescribed fluoxetine (dosage unknown). Due to the lack of a pharmacotherapeutic response, sertraline, venlafaxine, and paroxetine treatments were used, respectively and non-significant improvement with pharmacotherapy was achieved (dosage unknown). Besides that, the patient reported increased intolerance and irritability, therefore duloxetine treatment was initiated (30 mg/day). During the same period, she described dirt, contamination, symmetry obsessions, and over-cleaning and tidying/ordering the house (compulsions). Duloxetine was titrated to 90 mg/day and used for 10 years.

Also, in her psychiatric history, the patient reported that she underwent bariatric surgery in 2017, and after surgery, she had fear of gaining weight, had obsessive control over her weight, excessive eating episodes, and self-induced vomiting 2-3 times a week. She still was misusing laxatives and she had a negative body image even though her BMI was within normal limits. She started to exhibit hair-pulling and skin-picking behaviors. Duloxetine treatment was discontinued, and fluoxetine treatment was started at 20 mg/day considering the insufficient information about effective duration-dose use in the past and the efficacy profile.

She presented to the hospital 3 days after initiating the fluoxetine with sialorrhoea and difficulty in speaking. Her vital signs were stable during the examination. The patient was using no other medication. In her mental status examination, cog-

nitive functions were normal, her mood was anxious with restricted affect. In her thought process, her associations were normal, there were worries about gaining weight, disturbances in body shape, and contamination-symmetry obsessions in her thought content. Motor activity was normal. She had no impairment of intelligence and no perception abnormalities. In physical examination, bradymimia and hypersalivation were identified. There was no rigidity and no cog wheeling. Her cerebellar and cranial nerve examinations were also normal. The results of blood analysis, electrolytes, and miscellaneous tests were within reference ranges. The patient's prolactin level was 46.35 ng/mL. After discontinuing the fluoxetine treatment, the hypersalivation and bradymimia dramatically regressed and disappeared. The patient's follow-up prolactin test result was 10.5 ng/mL.

3.DISCUSSION

The case we report has different features from many perspectives. The patient's depressive and obsessive symptoms before bariatric surgery were treated with a noradrenergic antidepressant. Besides that, she presented with many psychiatric symptoms, of which impulsivity was at the forefront after bariatric surgery, and EPS was experienced as an adverse effect with a serotonergic agent that was chosen for the treatment of these problems. As is known, fluoxetine is an antidepressant that is approved for the treatment of bulimia nervosa and obsessive-compulsive disorder. Also, fluoxetine is commonly preferred for impulse control disorders.^{11,12}

EPS is seen with many pharmacotherapeutic agents, but usually with first-generation antipsychotics. Among the antidepressants, there are more reports about SSRIs causing EPS than the tricyclic antidepressant group.¹³ However, some

studies showed no significant differences between SSRIs, imipramine, and other antidepressants.¹⁴ Among the SSRIs, EPS is most seen commonly with fluoxetine; paroxetine and sertraline have also been associated with EPS.^{9,15} There are no certain risk factors related to EPS; however, older age; female sex; use of concomitant drugs such as anti-psychotics; and neurologic illness such as Parkinson's disease, which particularly affects basal ganglia, could be related to increased risk for EPS.¹⁴

The neuro-pathophysiologic mechanism for SSRI-induced EPS is still not properly understood. The extrapyramidal system involuntarily contributes to providing balance and muscular tone by the muscular regulation system.¹⁶ Neurotransmitters such as dopamine, serotonin, acetylcholine, and GABA play an important role in this regulation.¹⁷ 5HT_{2A} receptors in basal ganglia may lead to adverse effects; increased serotonin activation can cause EPS by inhibiting both the nigrostriatal and tubero-infundibular dopaminergic neuronal pathways.^{8,18} In this case, the patient's initial increased prolactin levels and subsequent decrease in prolactin following the discontinuation of fluoxetine can be explained by the effects on the dopaminergic pathways. It is also noteworthy that movement disorders that occur with SSRIs are more common in the literature; hypersalivation was prominent in our case. Case reports have established that SSRI-induced EPS could diminish following the discontinuation of drug or dosage modification.¹³ Similar to the literature, in our case, EPS effects regressed and disappeared after discontinuing the drug.

Another remarkable point in our case was the start of bulimia nervosa symptoms and trichotillomania after the gastric bypass procedure the patient in 2017. The term food addiction has been pro-

posed to help explain the increasing spread of obesity over the last 30 years.¹⁹ Studies have shown changes in neurotransmitter networks, including dopaminergic and opioidergic systems associated with overeating behavior.²⁰ In altered reward sensitivity and food-related attentional biases, binge eating disorder may be defined as an impulsive/compulsive disorder.²¹ Neuroimaging research has proposed there are corticostriatal circuitry changes observed in binge eating disorder similar to the changes in function in the prefrontal, insular, and orbitofrontal cortices and striatum in substance use disorder.²¹ Furthermore, the role of the dopaminergic system is being investigated in eating, alcohol, and substance use and whether there is a possible association between them.^{4,22}

In the literature, there are studies supporting the idea that patients who have undergone bariatric surgery may develop a new addiction or impulse control disorder instead of a 'food addiction,' depending on how the addiction is defined³. Authors have reported an increased frequency of eating disorders, skin picking, trichotillomania, kleptomania, non-paraphilic compulsive sexual behaviors, compulsive shopping, pathologic gambling, pathologic internet use, compulsive exercise, and especially alcohol use disorder following bariatric surgery, but this is still an area to be researched^{3,4}. Impulse control disorders or behavioral addictions may also be common in patients who undergo bariatric surgery because obesity is associated with increased impulsivity and decreased impulse control.^{3,23} Additionally, despite significant weight loss after bariatric surgery, persisting dissatisfaction with body shape is commonly reported, especially by women.²⁴

The case we present contributes to the literature about the psychiatric symptomatology that can be seen after bariatric surgery. The symptoms that

occurred after bariatric surgery in the presented case are a good example of additional diagnoses and problems that might occur in clinical practice, albeit rarely. It is important to remember that patients' past treatment and surgery history may be related to the current psychiatric symptoms and should be investigated in detail. Undetermined mechanisms and risk factors may play a role in the occurrence of fluoxetine-induced EPS adverse effects. An integrated treatment plan should be formed in case management, and care should be taken in terms of adverse effects in follow-up.

3.1. Declarations

Ethics approval and consent to participate

Patient confidentiality has been strictly observed. For this type of study ethical approval is not required. Written informed consent to participate was obtained from the patient.

Consent for publication

Written informed consent was obtained from the patient for publication.

Competing interests

No potential conflict of interest was reported by the authors.

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Authors' contributions

All listed authors have participated sufficiently in the design and writing of the manuscript.

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References

- Colquitt JL, Pickett K, Loveman E, Frampton GK. Surgery for weight loss in adults. *Cochrane database of systematic reviews* 2014;8.
- Kalarchian MA, Marcus MD. Psychosocial concerns following bariatric surgery: current status. *Current obesity reports* 2019;8:1-9.
- Mitchell JE, Müller A, Meany G, Sondag C. Bariatric Surgery and Substance Use Disorders, Eating Disorders, and Other Impulse Control Disorders. *Eating Disorders, Addictions and Substance Use Disorders: Springer*; 2014:163-176.
- Steffen KJ, Engel SG, Wonderlich JA, Pollert GA, Sondag C. Alcohol and other addictive disorders following bariatric surgery: prevalence, risk factors and possible etiologies. *European Eating Disorders Review* 2015;23:442-450.
- Georgiadou E, Gruner-Labitzke K, Köhler H, de Zwaan M, Müller A. Cognitive function and nonfood-related impulsivity in post-bariatric surgery patients. *Frontiers in psychology* 2014;5:1502.
- Vaswani M, Linda FK, Ramesh S. Role of selective serotonin reuptake inhibitors in psychiatric disorders: a comprehensive review. *Progress in neuro-psychopharmacology and biological psychiatry* 2003;27:85-102.
- Allsbrook M, Fries BE, Szafara KL, Regal RE. Do SSRI Antidepressants Increase The Risk of Extrapryamidal Side Effects In Patients Taking Antipsychotics? *Pharmacy and Therapeutics* 2016;41:115.
- Stahl SM. *Essential psychopharmacology: Neuroscientific basis and practical applications*: Cambridge university press, 2000.
- Madhusoodanan S, Alexeenko L, Sanders R, Brenner R. Extrapryamidal symptoms associated with antidepressants—a review of the literature and an analysis of spontaneous reports. *Journal of Clinical Pharmacy and Therapeutics* 2010;35:148-156.
- Coulter DM, Pillans PI. Fluoxetine and extrapryamidal side effects. *The American journal of psychiatry* 1995.
- Rossi A, Barraco A, Donda P. Fluoxetine: a review on evidence based medicine. *Annals of General Hospital Psychiatry* 2004;3:1-8.
- Bloch MR, Elliott M, Thompson H, Koran LM. Fluoxetine in pathologic skin-picking: open-label and double-blind results. *Psychosomatics* 2001;42:314-319.
- Vandel P, Bonin B, Leveque E, Sechter D, Bizouard P. Tricyclic antidepressant-induced extrapryamidal side effects. *European neuropsychopharmacology* 1997;7:207-212.
- Gony M, Lapeyre-Mestre M, Montastruc J-L, Centers FNoRP. Risk of serious extrapryamidal symptoms in patients with Parkinson's disease receiving antidepressant drugs: a pharmacoepidemiologic study comparing serotonin reuptake inhibitors and other antidepressant drugs. *Clinical neuropharmacology* 2003;26:142-145.
- Dutta B, Saha A, Nagesh I. Extrapryamidal symptoms

- after Fluoxetine. *Medical Journal, Armed Forces India* 2015;71:S99.
16. Caley CF. Extrapyramidal reactions and the selective serotonin-reuptake inhibitors. *Annals of Pharmacotherapy* 1997;31:1481-1489.
 17. Hamilton MS, Opler LA. Akathisia, suicidality, and fluoxetine. *The Journal of clinical psychiatry* 1992.
 18. Gill HS, DeVane CL, Risch SC. Extrapyramidal symptoms associated with cyclic antidepressant treatment: a review of the literature and consolidating hypotheses. *Journal of clinical psychopharmacology* 1997;17:377-389.
 19. Smith DG, Robbins TW. The neurobiological underpinnings of obesity and binge eating: a rationale for adopting the food addiction model. *Biological psychiatry* 2013;73:804-810.
 20. Nakanishi S, Hikida T, Yawata S. Distinct dopaminergic control of the direct and indirect pathways in reward-based and avoidance learning behaviors. *Neuroscience* 2014;282:49-59.
 21. Kessler RM, Hutson PH, Herman BK, Potenza MN. The neurobiological basis of binge-eating disorder. *Neuroscience & Biobehavioral Reviews* 2016;63:223-238.
 22. Volkow ND, Wise RA, Baler R. The dopamine motive system: implications for drug and food addiction. *Nature Reviews Neuroscience* 2017;18:741-752.
 23. Davis C. Attention-deficit/hyperactivity disorder: associations with overeating and obesity. *Current psychiatry reports* 2010;12:389-395.
 24. Wiederhold B, Riva G. Virtual reality in the treatment of body image disturbances after bariatric surgery: a clinical case. *Annual Review of Cybertherapy and Telemedicine* 2012 2012:278.