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Flu-like symptoms following botulinum toxin A application before incisional hernia repair: A case report

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Abstract

Botulinum toxin has been used for the treatment of numerous medical conditions. Recently, preoperative botulinum toxin A (BTA) injections into the lateral abdominal wall muscles are beneficial for facilitating ventral hernia repairs and improving surgical outcomes. Early and late, local and systemic adverse effects of BTA application have been described, some of them are flu-like symptoms (FLS). However, no case of FLS following botulinum toxin injections before ventral hernia repair has been described. In this report, we present a 58-year-old female patient who developed FLS episodes throughout preoperative and postoperative periods following BTA injections.

Keywords:

Botulinum toxin, complication, flu-like symptoms, hernia repair, incisional hernia, ventral hernia

Introduction

Botulinum toxin A (BTA) has been used for the treatment of numerous medical conditions including movement disorders and muscle pathologies.[1] Its first use in the field of general surgery was for the treatment of benign anal disorders.[2] Recently, preoperative BTA injections into the lateral abdominal wall muscles are beneficial for facilitating ventral hernia repairs and improving surgical outcomes.[3,4] Early/late and local/systemic adverse effects of BTA application have been described; some of them are flu-like symptoms (FLS).[5-7] However, no case of FLS following BTA injections before ventral hernia repair has been described to date.

In this report, we present a 58-year-old female patient who developed recurrent episodes of FLS, fatigue, head and abdominal pain, and nausea throughout preoperative and postoperative periods following BTA injections.

Case Report

A 58-year-old female patient was diagnosed with an incisional hernia following midline laparotomy for benign colorectal pathology. Computed tomography revealed a fascial defect of 15 cm wide. A mesh-based repair following preoperative ultrasound-guided BTA application was planned. A total of 500 U of BTA was given at three injection sites on each side of the abdomen uneventfully, and a 4-week interval was set.

The patient was admitted with complaints of fatigue, myalgia, subfebrile fever, and loss of appetite. Physical examination of injection sites and the abdomen was normal, however, white blood cell (WBC) count and C-reactive protein (CRP) level were high (WBC = 14.000, CRP = 65). The patient was managed conservatively with symptomatic medical treatment, and the symptoms were resolved within 48 h.

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On the 19th day of BTA application, she described upper respiratory tract infection symptoms, such as sore throat, runny nose, and nasal congestion, with increased WBC count and CRP level. Polymerase chain reaction for coronavirus disease 2019 and multiplex respiratory tests were negative. Symptomatic treatment provided rapid relief again and laboratory parameters normalized.

The interval between the BTA application and the hernia repair was extended to 1 week for complete resolution of the symptoms. Bilateral posterior component separation and sublay mesh repair were performed without any intraoperative complication. On the second postoperative day, the patient described extreme weakness and headache. The core temperature was 38.5°C. CRP was 175 μg/ml. She was already under antibiotics. Chest X-ray and abdominal ultrasound did not display any abnormalities. Wound, blood, and urine cultures were negative. The symptoms were resolved again within 48 h, and the patient was discharged on the fifth postoperative day.

The patient was seen in the outpatient clinic on the 10th postoperative day. The incision was clean, the abdominal examination was normal, and the drain was removed. She was admitted on the 18th postoperative day again with complaints of high fever (39°C), shivering, chills, nausea, diarrhea, myalgia, and fatigue. Cultures were all negative. Laboratory parameters were within normal ranges. The patient was kept in hospital for 48 h and discharged upon the resolution of the symptoms. No further episodes have been recorded, and the patient is completely fine in the sixth month.

Discussion

BTA has been used to facilitate surgical repair of incisional hernias with large defects for the last 15 years.[3] It has been shown that this procedure is safe and effective.[8,9] Although BTA injections are generally minor procedures, some adverse effects have been presented. Recorded complications of BTA applications for medical and cosmetic purposes are mostly mild, and generally limited at the injection sites. FLS following BTA injections are rare, independent of indication and dose, reported both in adult and pediatric patient groups, and described as a clinical picture including the presence of local and systemic symptoms that are compatible with upper respiratory tract infection, including fever, general malaise, fatigue, and anorexia in 4 weeks after the procedure.[2,10,11] Other possible causes for these symptoms should be excluded to link FLS with BTA injection. According to the review article from the United States, various commercial forms of BTA may cause FLS in 2%–20% of patients. Most of them have mild to moderate symptoms, which last less than 2 weeks.[6]

Producer companies claim that BTA cannot be detected in the peripheral blood after injections at recommended doses.[12] Nevertheless, systemic spread of BTA is a possibility and can cause generalized weakness, and may result in cardiovascular changes via autonomic disturbances.[13,14] The amount of BTA in systemic circulation is not calculated, but it can reach sufficient levels to trigger an immune reaction.

There are no specific recommendations or treatment strategies for FLS associated with BTA application. Symptomatic treatment with analgesics, antipyretics, and anti-inflammatory drugs have been used, but their prophylactic usages are not advised. Systemic adverse effects after therapeutic or cosmetic applications of BTA are rather minor problems, whereas such complications before a major surgical repair of a large abdominal wall hernia under general anesthesia are a much more complex issue. To date, there is no scientific record on this specific condition, for this reason, it is not possible to say how long the interval between the BTA application and hernia repair should be extended. In this case, we kept the interval 1 week longer than the usual schedule. Nevertheless, the patient developed similar symptoms in the very early postoperative period. Hopefully, FLS did not complicate surgical outcomes. It was reported that the adverse cardiovascular effects slowly resolved within 45 days.[13] Therefore a 2-month interval may be needed before hernia repair. Our team was not aware of this specific problem after BTA use, then we got related information with a PubMed search.

Conclusion

FLS can be seen after BTA injections. Hernia surgeons who prefer preoperative BTA applications should be aware of this specific complication. No preventive measures have been described. Symptomatic treatment is the only aid. It seems to be better to set a 2-month interval between the injections and surgery to provide an uneventful postoperative period.

Author contributions

Dr. Kulacoglu: Surgical procedure, manuscript design, literature search, data analysis, and manuscript writing. Dr. Alptekin: Procedure, literature search, and manuscript review. Dr. Celasin: Surgical procedure and manuscript review.

Ethical policy and institutional review board statement

This study complies with the ethical standards of the institutional or regional human experimentation committee and the Helsinki Declaration of 1975 (2013 revision). Historical patient records were analyzed.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Data availability statement

All data generated and/or analyzed during this study are included in this published article.

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Nil.

Conflicts of interest

Dr. Hakan Kulacoglu is an Editorial Board member of *International Journal of Abdominal Wall and Hernia Surgery*. The article was subject to the journal's standard procedures, with peer review handled independently of this Editorial Board member and their research groups.

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