Antidepressant effects of botulinum toxin A: scientific rationale

I am writing to redress a very significant omission in your recent publication by Young.[1] The author states that the facial feedback literature "provided the rationale for a recent trial by Wollmer and colleagues[2] studying the effect of injecting botulinum toxin into 3 sites in the glabella region of depressed patients." This statement completely ignores the study by my group,[3] published 6 years before the Wollmer study. We were the first to show that botulinum toxin A could be used as an antidepressant by inhibiting frowning in patients with major depression. This initial study has provided the rationale for future trials of botulinum toxin A in populations with depression.[4]

Wollmer and colleagues[2] acknowledge our study in the introduction to their paper when they state "Accordingly, preliminary data from an open case series with 10 female patients indicate that it may reduce the symptoms of depression.[3]" They go on to design their clinical trial based on the large effect size seen in our study: "A power analysis based on the observations from the open case series,[3](...)." In their conclusion, they state "Remission of participants without previous or present antidepressant medication also occurred in the open case series.[3]"

In our study, patients who met DSM-IV criteria for ongoing major depression in spite of pharmacologic or psychotherapeutic treatment were evaluated with the Beck Depression Inventory (BDI-II) before receiving botulinum toxin A to their glabellar frown lines. Two months later, all patients were re-evaluated clinically and with the BDI-II. Nine of the 10 patients were no longer clinically depressed 2 months after treatment.

The mean pretreatment BDI-II score for all patients was 30.7, versus 8.1 posttreatment (p = 0.005, Wilcoxon signed rank test). A large effect size was seen, with a difference of 22 points on the BDI-II scale, before and after treatment.

We were also the first to show the complete resolution of the omega melancholium sign in a patient after treatment with botulinum toxin A.

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Competing interests: Eric Finzi holds patents for the use of botulinum toxin for depression.

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References

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2. Wollmer MA, de Boer C, Kalak N, et al. Facing depression with botulinum toxin: a randomized controlled trial. *J Psychiatr Res* 2012;46:574-81.
3. Finzi E, Wasserman E. Treatment of depression with botulinum toxin A: a case series. *Dermatol Surg* 2006;32:645-9.
4. Finzi E. *The Face of Emotion: How Botox Affects Our Moods and Relationships.* New York: Palgrave Macmillan; 2013.

Author response

Finzi mentions a "very significant omission" in my article:[1] that I did not mention the study by Finzi and Wasserman[2] that was "the first to show that botulinum toxin A could be used as an antidepressant." My commentary was meant to discuss 3 recent developments in the treatment of psychiatric disorders, describing the original ideas that led to the development of those treatments, their current status, and the work that needs to be done to establish them as effective treatments. It was not meant to be a comprehensive review, which would not be possible given the word limit for a commentary. The theory that resulted in the test of botulinum toxin for the treatment of depression, the facial feedback theory, predates the case series of Finzi and Wasserman.[2] Furthermore, while a case series may support the idea of carrying out a controlled trial, it cannot demonstrate the efficacy of a treatment. That can be done only in adequately designed placebo-controlled trials. If the antidepressant effect of botulinum toxin is ever established, it would be appropriate to cite the Finzi and Wasserman study[2] in a comprehensive review of the topic. However, I decided not to mention the case series as it was not relevant to the objectives of the commentary, given the limitations of a case series in demonstrating the efficacy of a treatment, and because it did not contribute to the theoretical rationale for testing the treatment.

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