

Botulinum toxin for depression: Does patient appearance matter?

Most people know Botulinum Toxin (Botox®) as “the stuff that people use to make them look younger.” Botulinum toxin is a “neurotoxin” produced by a bacteria called *Clostridium botulinum*. When injected in small amounts, it causes weakening of the muscles. Due to its ability to reduce wrinkles, botulinum toxin has been the # 1 cosmetic procedure since the year 2000, with over 4 million treatments performed in 2015.



Fig. 1. Anguished appearance in a male patient. Botulinum toxin injected into the forehead to reduce the "look" of depression.

Botulinum toxin is so much more than a youth serum; it is currently being used for over 50 other medical conditions including migraines, overactive bladder, excessive sweating, vision problems, and muscle spasms.

Recently, doctors are using botulinum toxin to treat depression. New studies have shown that depressed patients were no longer depressed after receiving botulinum injections into the forehead.

The antidepressive effects of botulinum toxin were profound; over half of the depressed patients responded favorably to the treatment. The question then remained, was it the cosmetic effects of the treatment that caused an improvement in mood, or was there something else going on? *Simply put, did patients feel better just because they looked better?*

In order to answer this question, researchers investigated if there was a link between improvement in appearance (i.e. a decrease in the number of wrinkles) and improvement in mood (i.e. a decrease in depressive symptoms), in patients who received botulinum toxin for depression.

The study revealed that there was no link between improvement in appearance and improvement

in mood. In other words, mood didn't improve just because people looked better—something else was going on.



Fig. 2. Anguished appearance in a female patient. Botulinum toxin injected into the forehead to reduce the "look" of depression.

Researchers first looked to see if people with more wrinkles before the treatment get more benefit to their depression. The answer was "no."

Researchers then looked to see if patients who had bigger improvement in their wrinkles would have more improvement in their depression. The answer was also "no."

The take home message of this study suggests that 1. People with major depression may experience a lift in mood after treatment with botulinum toxin, regardless of whether or not they have wrinkles and 2. Cosmetic improvement alone is *not* the reason for the improvement in mood.

Of course, this leads to more questions. If people are having improvement in mood and it is not due to cosmetic enhancement, then why? There are several theories but no definite answer as of yet.

Given that major depression affects more than 350 million people worldwide, and approximately 1/3 of people do not respond to antidepressant medication, further studies are warranted on botulinum toxin and its effects on mood.

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Publication

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Reichenberg JS, Hauptman AJ, Robertson HT, Finzi E, Kruger TH, Wollmer MA, Magid M.
J Am Acad Dermatol. 2016 Jan