

Elixir Of Youth

*There are numerous mysteries shrouding Botulinum exotoxin Type A. While the positive effects of Botulinum are galore, it should strictly be used by trained physicians and surgeons only, says **Jayata Sharma***

Botulinum Exotoxin, reminiscent of a poison some time back, is today being used rampantly for cosmetic and therapeutic purposes. According to estimates, around 200 dermatologists and plastic surgeons in India are using Botulinum exotoxin type A in their practice. Though there is no scientific data, anecdotal evidence and doctors' experience suggests that the amount of Botulinum exotoxin type A the US uses in a day is equivalent to what India uses in a couple of months!

A purified protein produced by the clostridium botulinum bacterium, Botulinum exotoxin type A is injected directly into the muscles. It works by blocking the transmission of nerve impulses to the injected muscles; this reduces the activity of the muscles that cause either cosmetic or therapeutic problems.

Botulinum exotoxin type A is available in the market as Botox from Allergan. The company, headquartered in Irvine, California, operates in India as Allergan India. Another product by an Irish company called Dysport, also Botulinum exotoxin type A, is also available in the market.

How Botulinum Became Popular

Botulinum exotoxin type A was introduced in India in the 70's for treating a medical condition called Benign Essential Blepharospasm (BEB). This is a neuromuscular disorder, where patients cannot open their eyes as they blink too often. Botulinum treated this problem of spasms by paralyzing the muscles, which regulate the closing of the eyelids. **It was also used to treat strabismus (squint of eyes). Much later, it was noticed that the part of the face where Botulinum was injected developed no wrinkles and had a good lustre. "It was then that Botulinum exotoxin type A was used for correcting cosmetic problems", informs Dr Debraj Shome, Consultant Ophthalmic and Plastic Surgeon, Aditya Jyot Eye Hospital, Mumbai. Botulinum exotoxin type A thus gained popularity only when it was used for cosmetic purposes some three-four years ago.**

What Botulinum Exotoxin Cures

Botulinum exotoxin type A is effectively used for both cosmetic and therapeutic treatments. "Patients with dynamic creases, i.e. creases which become prominent during animation, can be treated with more than 90 per cent effectiveness," says Dr Rakesh Khazanchi, Consultant and Chairman, Department of Plastic Surgery, Sir Ganga Ram Hospital, New Delhi.

It is used for the treatment of facial lines and six months ago, it was approved by the US FDA for all facial hyperkinetic lines. The most common uses are treatment of lines between the eyebrows (frown lines or glabellar lines), horizontal lines on the forehead and lines on either side of the eyes (crow's feet).

As the skin at the neck is more relaxed, Botulinum cannot work efficiently there. "The result with horizontal lines of the neck is about 50 per cent and around 30 units are required, at multiple injection sites," says Dr Rashmi Shetty, a Cosmetic Physician based in Mumbai. "In addition, Botulinum exotoxin type A does not work on hand lines as the skin on the hand is not as much toned, and the wrinkles are static," says Dr Andrew Scheman,

Associate Professor of Clinical Dermatology, Northwestern University, Chicago, and USA.

A major breakthrough occurred when Botulinum exotoxin type A could be used to treat bladder dysfunction (incontinence). Botulinum exotoxin type A cures bladder dysfunction by preventing hyper contractions of the muscle. In addition, it helps in treating migraine, achasia, cervical dystonia, and cerebral palsy (a group of non-progressive neurological physical disabilities in the development of human movement and posture).

Apart from incontinence, bruxism (grinding teeth during sleep) can be cured by Botulinum exotoxin type A. **"I use Botulinum for bruxism, as this abnormality can cause the jaw to develop a square shape. This is particularly unwanted amongst lady patients," explains Dr Debraj Shome.**

There are persons whose face appears always angry or sad or worried, even when they are not. Botulinum exotoxin type A helps in erasing these unwanted lines and makes sure when the person is actually angry or worried, the lines come naturally.

Actors, businessmen, and service industry personnel use Botulinum as they are in constant interaction with people and they feel the need to have a flawless skin. Young people who want to appear attractive also go for Botulinum.

Different Strokes

The art lies in getting rid of the frown lines and yet giving the patient a natural look, rather than an artificial plastic appearance. This is where the experience of surgeon or the cosmetic physician counts. "It transforms a person completely," avers Dr Rekha Sheth, Cosmetic Dermatologist and President, Cosmetology Society (India) (CSI).

The amount of Botulinum used depends on numerous factors and every doctor differs in the treatment of each patient. It is an individualised procedure. "I typically use 25 units of Botulinum exotoxin type A for each region. Which means, 25 units for frown lines, 25 units for crow's feet and 25 units for forehead lines," says Dr Scheman.

Dr Shetty injects 12-16 units on each side for crow's feet, two to three units on each side for under eyes, 16-20 units for the forehead and 60-70 units for face contouring. **Dr Debraj Shome also differs in his shots, and gives 10 units for the glabellar lines and goes up to around 100 units for all facial lines. For administering injections,** the physician must know how to alter the usual injection amounts and sites if problems arise or if the patient needs treatment in atypical sites.

Therapeutic Treatments

For the treatment of incontinence, a two-ml (one ml Botulinum with one ml dilution would consist of around 100 units) shot of Botulinum exotoxin type A is injected into the urinary bladder by endoscopy. "I treated my first patient for incontinence in December 2005," recalls Dr Shailesh Raina, Urologist, Jaslok Hospital, Mumbai. The procedure takes only about 15 minutes and the patient can walk home the same day. Depending on the urodynamics of the patient, including the bladder pressure capacity, pressure, and compression, the patient may have to take two to three shots after three to six months. Generally, 200-300 units are required to complete the whole procedure in a single sitting. "However, for treating problems related to any sphincter, a meagre 50 units does the job," adds Dr Raina. For hyperhidrosis, with a few injections, botulinum enters specific sweat glands responsible for excessive sweating. It blocks the release of the chemical, which signals the perspiration at a particular site. The whole procedure takes hardly 20 minutes.

Cosmetic Treatments

The procedure is performed by administering a few injections that relax the muscle by blocking nerve impulses that trigger wrinkle-causing muscle contractions. The discomfort is minimal—often described like an ant bite

sting for a few seconds. One can resume normal activities immediately. For the effect to be seen fully, it takes seven-ten days post treatment. "The number of units may vary with the experience and skill of the physician performing the treatment," says Dr Mukta Sachdev, Consultant Dermatologist, Manipal Hospital, Bangalore.

Why Only Type A?

There are seven types of Botulinum exotoxin in existence (type A-G), and type A was discovered initially. Later, it was found that A has high level of impurities, viz protein. In addition, it was detected that several patients were developing resistance to A. All of this resulted in the invention of type B.

Type B, also called Myobloc, is very rarely used and that too only in the US. Later, type A was introduced again, with impurities reduced to 0.5 mg of human albumin per 100 mg of Botulinum exotoxin type A. Established medical studies, evidence and data on long-term safety effects are all available only for exotoxin type A.

The Age Factor

When using Botulinum exotoxin type A for cosmetic indications of relaxing the facial dynamic lines, the age group may vary. Usually children do not require Botulinum exotoxin type A, except for the treatment of cerebral palsy. "I find the majority of my patients are approximately 30 years of age and older," informs Dr Sachdev.

While Dr Debraj Shome has administered Botulinum for cosmetic purposes in a 16-year-old girl in the US, Dr Sheth has treated a 70-year-old patient with Botulinum exotoxin type A. "I warned him it might not work, but in the end, he was happy with the results," says Dr Sheth. In therapeutic conditions, the lower limit for Botulinum exotoxin type A is 18 years, while the upper limit is 70 years. "Outside these limits, the resistance power is less in the body, so we avoid this section," says Dr Raina.

Play Safe

There are various precautions that both the doctor and the patient take to minimise the side effects of using Botulinum exotoxin.

The syringes used are the 29, 30 and 31-gauge ones. However, the 30-gauge syringe is the most popular. Each needle can take 40 units when the dilution of 100 units is with 2.5 ml of normal saline. "For the needle to be sharp enough and not become blunt with each prick, I prefer taking four syringes with 10 units in each," informs Dr Shetty. Cosmetic physicians and dermatologists with in-depth knowledge of human anatomy are the best ones to use Botulinum exotoxin type A.

When Botulinum is injected, it can cause a bit of irritation, just as any other injection. But, after **a shot of Botulinum, one is not supposed to rub the injected part, as it can cause the drug to spread, which can result in unwanted side effects. "The injected area should not be rubbed vigorously for the next 72 hours," says Dr Debraj Shome.**

Botulinum exotoxin type A is not given to patients who have undergone ophthalmic surgery or laser treatment. "Likewise, a person who has taken aspirin must not be injected with Botulinum exotoxin type A for the next seven days," says Dr Sheth. Additionally, Botulinum exotoxin type A should not be administered during pregnancy and nursing. Botulinum exotoxin type A generally spreads 1-1.5 cm in diameter, and by exercising, it can spread much more, which can be dangerous. The rectangular area just above the centre of eyebrows needs to be left alone too.

"While giving shots on the temple, the units should not exceed four-five units. And, while treating the facial lines,

care should be taken that minimum distance between two pricks is 1.5 cm," informs Dr Shetty.

"When treating incontinence, the bladder should not have any infection, should not be very small and must have a decent capacity to bear the treatment," says Dr Raina. Also, only the first layer of the bladder muscle should be injected and not deeper than that.

Also, for providing training, the CSI conducts annual conferences, which includes training and awareness programmes for doctors from all over the country.

Other Cosmetic Uses

Other uses for Botulinum exotoxin type A are for treating under-eye lines, lines on the bridge of the nose (bunny lines), correcting downturned corners of the mouth (marionette lines), relaxation of lines above and below the lips, relaxation of vertical neckbands (turkey neck), and dimpling of the chin. In addition, it is possible to give a mild eyebrow lift with Botulinum exotoxin type A. Also, face contouring, hyperhidrosis (excessive sweating), and open pores can be treated.

Side Effects

Improper dosage might result in wrong retention of urine and slight headache when treating incontinence. Sometimes this treatment can result in drooping of the eyelids. This may make a person look sleepy all the time and he/she might have difficulties in the vision.

If the technique is not performed correctly, the patient can experience double vision. Although this typically lasts for less than a month, often only a week or two, it is very upsetting to patients if this occurs. "The problem of Botulinum is that it needs repeat injections," says Dr Khazanchi. This can be torturous sometimes. Also, it can result in relaxation of untargeted muscles.

Wrong dosage of Botulinum exotoxin type A can make a person's eyebrows look unsymmetrical. One eyebrow might rise higher than the other and seem uneven. There may be slight bruising or soreness at the site of injection. In some cases, patients do complain of a slight headache, which resolves in two-three days.

Break That Myth

Patients think that if they stop Botulinum exotoxin type A they will have more lines and wrinkles. Shattering such myths, doctors maintain that with this therapy the effect may last longer with repeated treatments. The result wears off progressively (not suddenly) and eventually wrinkles will return as before, and not be more than before. "Of course one would be six months older, which needs to be taken into account," says Dr Sachdev.

Show Me The Money

The cost of Botulinum exotoxin type A ranges from anything around Rs 200 to Rs 500 per unit. It depends on factors like: the doctor's fee, his training standards, the age of the patient, the risk involved, and many more. For instance, if one is undergoing treatment for crow's feet, he/she might require around 12 units on each side. The total cost will be of 24 units, which depending on the doctor could range from Rs 5,000 to Rs 12,000. The cost of therapeutic treatment of bladder dysfunction might range from Rs 40,000-Rs 55,000 for each sitting, which usually includes the cost of Botulinum exotoxin type A.

Benefits

According to experts, the results patients get from Botulinum exotoxin type A are far better than any other alternate solutions available. There are many conditions where Botulinum exotoxin type A has averted surgery, like face contouring. **"Around 30 per cent of my patients have so far avoided surgery as they have**

Botulinum exotoxin type A for an injectable non-surgical wrinkle treatment as an option now," says Dr Shome.

Plus, this is a fast-recovery method and surely increases the patient base too. After the US FDA approval, patients are more willing to accept this therapy. For bladder dysfunction, the alternate treatment options are sling surgery, sacral neuro modulation, use of bulking agents and artificial sphincter implantations. All of this involves some surgical procedure, which can now be comfortably avoided in many cases. **The best part, according to Dr Shome, is that the effects are temporary. Hence, if the patient does not like the results, he/she can opt out. After some months, the effect will wear out, leaving the skin like before. Besides, the whole procedure only takes 10-20 minutes, depending on the kind of therapy. Both in cosmetic and therapeutic conditions, this time rarely increases.**

Looking Ahead

Botulinum exotoxin type A is definitely gaining immense popularity, as is evident from the fact that the market for it is growing by 100 per cent annually, informs Dr Shetty. The popularity of the therapy has, however, engendered mushrooming of a spate of clinics providing this wonder cure, sans trained manpower. Recently, a skin beauty clinic in Mumbai was caught on the wrong foot due to wrong usage of Botulinum exotoxin type A. The result was that the client's face was disfigured. This happened because the staff was not adequately trained in administering this drug. To avoid such incidents, all doctors stress on the regulated use of Botulinum exotoxin type A. "When adequately trained, doctors practice Botulinum exotoxin type A with almost 90 per cent results," says Dr Khazanichi. Dr Scheman, who has injected Botulinum more than 7,000 times till date, agrees saying, "In the US, Botulinum exotoxin type A is popular mainly because of the satisfaction rate of more than 95 per cent. In fact, the main reasons for its extreme popularity in the US are its dramatic effect and its safety."

Doctors always recommend that a patient should check their doctor's credentials - whether they are trained dermatologists, their degrees recognised and how experienced they are in performing that particular procedure.

Standard sets of guidelines and a large amount of medical data are available to doctors to ensure safe and correct Botulinum exotoxin type A practice. It is important to keep oneself updated with newer treatments and techniques to impart the best and latest care to patients. An experienced physician and a well-informed patient is the best combination for any cosmetic treatment.

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