



# INTRA-ARTICULAR INJECTION OF BOTULINUM TOXIN: ANALGESIC EFFECT




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# PREAMBLE:



- ✦ A prospective study has begun in our department in 2007, following the work on the knee and shoulder joints published by Mahowald ML and Singh JA in 2004 and 2006
- ✦ The only goal of the injections is pain
- ✦ The botulinum toxin (BT) injected is Botox\* ( Allergan Pharmaceuticals, Westport, Ireland)
- ✦ Our topic in the temporo-mandibular joint

# ACTIONS OF BOTULINUM TOXIN:



- ✦ Action on the **muscle** : relaxation up to palsy
- ✦ Action on the **gland** : decrease secretion, or more, stop it
- ✦ Analgesic effect :action on neuropathic pain
- ✦ ....and on other pains, such as articular pain....

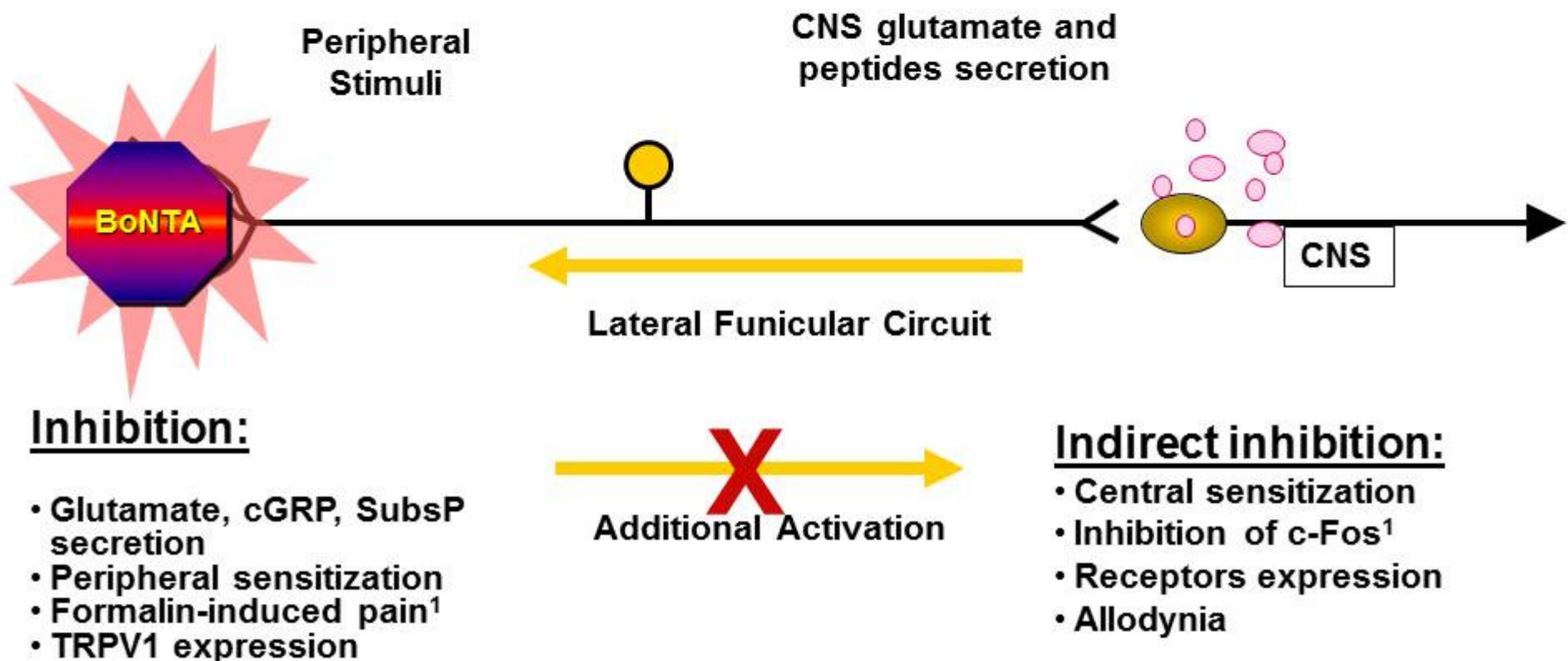
# TOXIN ANALGESIC ACTION:



- ✦ BT seems to have a neuro-inhibiting effect, blocking transmission of pain information
- ✦ By preventing neurotransmitters secretion (as P-substance or glutamate)
- ✦ Real desensitization either on peripheral nerve endings or at the center level

# BoNTA Inhibits Peripheral Sensitization (direct) and Central Sensitization (indirect)

*Clinical relevance of these results remains to be fully established*



# PROTOCOL:



- ✦ Only for severe and chronic pain
- ✦ For patients who have had all the treatments, excluding surgery: physiotherapy, usual grade I to III analgesic medications, dental groove, intra-muscular injections of botulinum toxin ( masseter and/or temporal muscle) and intra-articular injections of hyaluronic acid
- ✦ VAS (visual analogical scale) higher than 5/10 after all of those attempts



# TOXIN VERSUS....?



- ✦ A study versus placebo is not possible
- ✦ Washing of the temporo-mandibular joint with buffered saline is known to have a therapeutic effect
- ✦ Even if the action is brief

# TECHNIQUE:



- ✦ 30U Botox are injected in each articulation (not systematically bilateral) in the classic **aseptic** way
- ✦ Under local **anesthetic** +/- premedication
- ✦ Two important risks could occur during the injection



# THE DOSAGE:



- ✦ The first dosage by Mahowald's team was around 50U Botox
- ✦ The temporo-mandibular joint is more than 5 times smaller than the knee
- ✦ But the toxin does not work like that, you must have a minimal efficient dose.
- ✦ So, we tried with 20U, then with 30U
- ✦ The trial with 50U was not interesting

# AND TO FINISH WITH THE TECHNIQUE...

- ✦ Aperture measurement before and after the injection
- ✦ Quality of life and pain evaluation questionnaires are given
- ✦ Patients systematically reviewed after one month

# MATERIAL AND METHOD:

- ✦ The dilution is 100U Botox\* in 1 ml of 0,9% sodium chloride in a graduated syringe
- ✦ We do not use fluoroscopy, only anatomical landmarks

# ANATOMICAL LANDMARKS:

- ✦ Posterior aspect of ascending branch of the mandible towards the condyle
- ✦ The inferior border of the zygomatic arch
- ✦ Perception of the movement of the condyle ( if there is no ankylosis)

# APERTURE MEASUREMENT:

- ✦ It is done before and after the injection allowing certainty of it being done in the joint
- ✦ The washing effect previously described leads towards brief amelioration of aperture capacity
- ✦ So , the practitioner can be sure to inject in the joint

# THE INJECTION:



- ✦ The mouth is open during the injection
- ✦ Injection in the posterior part of the joint

All is done to increase the room for the product, because sometimes, the joint space has decreased so much, that every improvement is welcome



# RESULTS:



- ✦ At this day , we have 56 patients in our study
- ✦ 26 patients (46 %) have a VAS = 0/10 after one month, beginning from 8 to 10/10 before the injection
- ✦ 17 (30 %) have a discontinuous pain, from 2 to 4, after the injection
- ✦ 13 (24 %) showing no significant amelioration : 9 persons have a VAS < 8 and 4 have 8 or more /10  
There is no real « non-responders »

# CAUSES OF FAILURE:



- ✦ Product : very few people in the world do not react
- ✦ Practitioner : even well trained , without fluoroscopy, you can sometimes inject out of the joint
- ✦ Protocol : we have done it , so maybe it is not perfect
- ✦ Patient : our protocol is long and « heavy » , so we do not add a psychiatric evaluation and MD accustomed to soothe severe and chronic pain knows that some of them do not want to be relieved

# ACTION OF THE BT:



- ✦ We do not have any side effects
- ✦ The effect is gradual
- ✦ Beginning 15 days after the injection
- ✦ Maximum analgesia is reached at 30 days
- ✦ Effect still remains for 4 to 5 months
- ✦ And sometimes we do not have to re-inject

# EXAMPLE:





# OTHERS ARTICULATIONS....

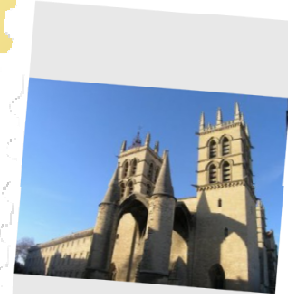


# CONCLUSION:



- ✦ It is only a tool between other treatments
- ✦ The indication must be suitable
- ✦ Currently , BT is well accepted by the patients
- ✦ The technique is simple and the cost reasonable
- ✦ The action is only on pain





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THANK YOU  
FOR YOUR ATTENTION

