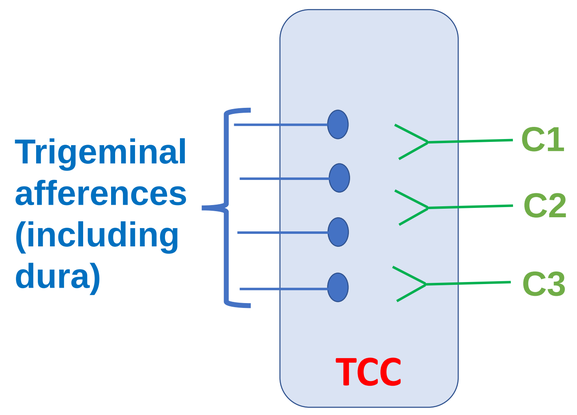
What Botulinum Toxin Type A tells us about the role of myofascial syndromes in the clinical course of migraine

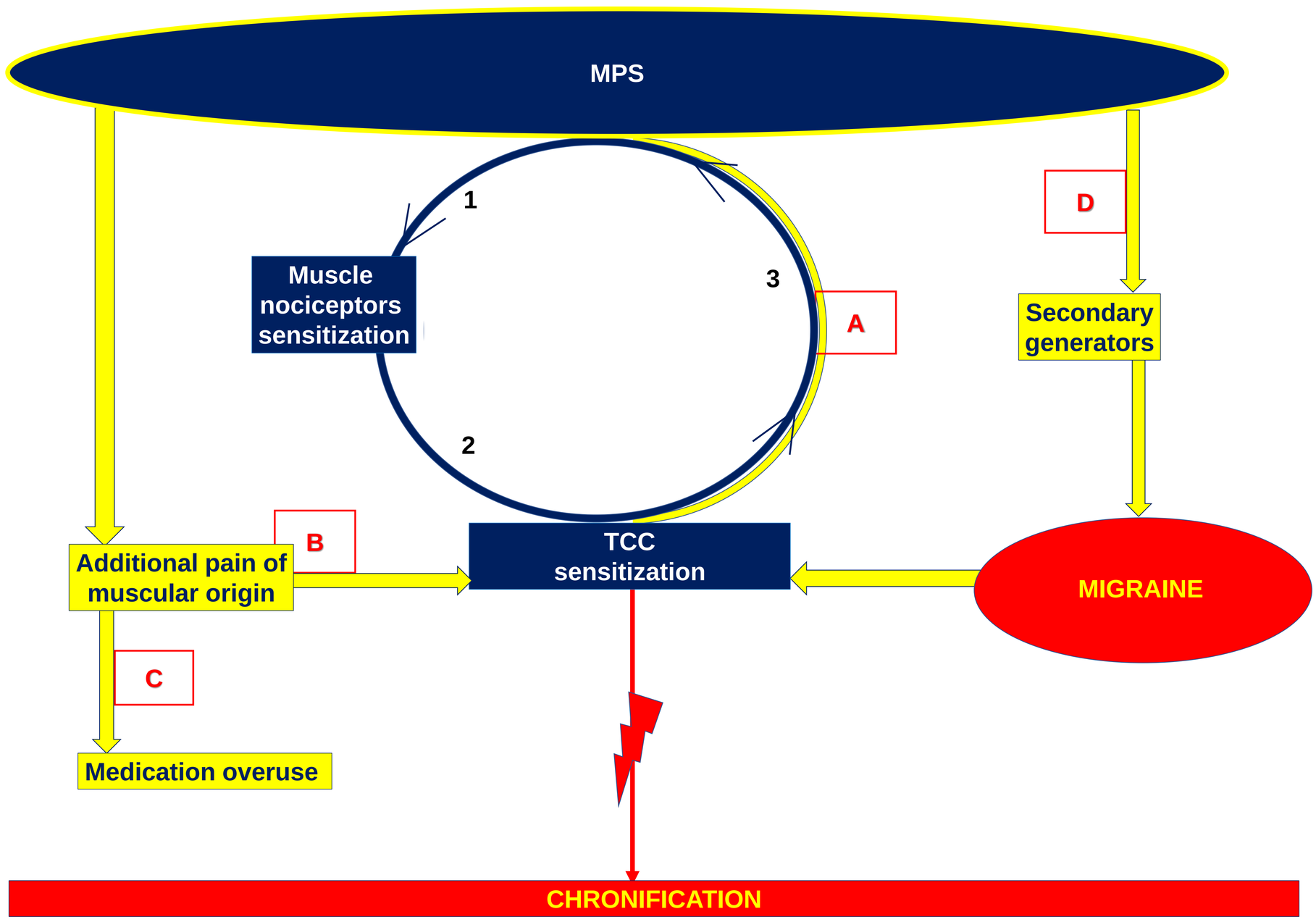
Danièle Ranoux, MD
CHU Dupuytren, Limoges and Groupe Hospitalier Saint Joseph, Paris, France
daniele.ranoux@gmail.com

Background

- The main system of communication between the inside and the outside of the skull goes through the trigeminocervical complex (TCC). The TCC connects the whole dura to all tissues innervated by C1, C2 and C3, of which cervical muscles and fascia are particularly relevant.
- Chronic migraine (CM) is marked by sensitization of the TCC trigeminovascular neurons. Myofascial pain syndromes (MPS) are significantly associated with migraine, especially if it is chronic. This “CM plus MPS” subtype of CM is thought to be more responsive to BTX-A treatment (1,2).
- **We think that BTX-A acts on MPS, and hypothetize that MPS could influence the natural course of migraine, and contribute to the chronification of pain.**



Interactions between MPS and migraine



In blue: The vicious cycle of the constitution and perpetuation of MPS.
1 :MPS are due to muscle traumas or misuse, and are characterized by C-nociceptors sensitization
2 :Subsequent central sensitization of the TCC
3 :Central sensitization perpetuates and reinforces the MPS

In red and yellow: what about MPS in migraine patients ?
A. MPS is reinforced by migraine via increased TCC sensitization
B. Local and referred myofascial pain is part of the CM clinical spectrum, and increases TCC sensitization.
C. This pain is non-migrainous by nature, and is thus poorly responsive to treatments, explaining why most patients overuse medication. In « CM plus MPS » group, **medication overuse** is likely to be the **consequence** of MPS.
D. In certain patients migraine attacks usually begin with the contraction of one muscle which acts as a « secondary generator », increasing the number of migraine attacks.

Clinical implications

- Early detection of MPS is mandatory in migraineurs, as MPS treatment could, at least partly, avoid the transition to chronic pain.
- The management of medication overuse headache in “CM plus MPS” patients should primarily rely on MPS treatment (including BTX-A) rather than drug withdrawal.
- BTX-A treatment should be proposed to CM patients with evidence of MPS.
- The sites of BTX-A injections should be chosen on an individual basis, targeting MPS and muscular “secondary generators”.

1- Burstein R, Blake P, Schain A, Perry C. Extracranial origin of headache. *Curr Opin Neurol.* 2017;30(3):263-71.
2. Ranoux D, Martiné G, Espagne-Dubreuilh G, Amilhaud-Bordier M, Caire F, Magy L. OnabotulinumtoxinA injections in chronic migraine, targeted to sites of pericranial myofascial pain: an observational, open label, real-life cohort study. *J Headache Pain.* 2017;18(1):75.