OnabotulinumtoxinA decreases interictal CGRP plasma levels in patients with chronic migraine

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OnabotulinumtoxinA (onabotA) has shown efficacy in chronic migraine (CM). Its mechanism of action, however, remains obscure. We have analysed whether treatment with onabotA is able to induce changes in interictal plasma calcitonin gene-related peptide (CGRP) concentrations, which have been shown to be increased in patients with CM. Calcitonin gene-related peptide levels were determined in samples obtained from the right antecubital vein using ELISA, outside a migraine attack and having taken no symptomatic medication in the previous 24 hours, in 83 patients with CM (average age 44 years; 94% females) before and 1 month after treatment with 155 to 195 U of onabotA. CGRP levels after onabotA treatment (median, 51.89 pg/mL; range, 199.4-10.2) were significantly lower as compared with CGRP levels obtained before onabotA treatment (median, 74.09 pg/mL; range, 241.0-11.4; P 0.001). Pretreatment CGRP levels in responders (76.85 pg/mL) were significantly higher than those seen in nonresponders (50.45 pg/mL; P 0.001). One month after treatment, the CGRP levels did not change in nonresponders (51.89 pg/mL; P not significant), but significantly decreased in responders (52.48 pg/mL; P 0.003). A number of demographic factors, clinical features, and comorbidities were not different in responders as compared with those of nonresponders. These results confirm that interictal CGRP levels can be of help in predicting the response to onabotA and suggest that the mechanism of action of onabotA in CM is the reversal of sensitization as a result of the inhibition of CGRP release.

CGRP

Chronic migraine

Migraine

OnabotulinumtoxinA

botulinum toxin A

calcitonin gene related peptide

interictal calcitonin gene related peptide

unclassified drug

acetylcholine release inhibitor

biological marker

botulinum toxin A

calcitonin gene related peptide

adult

age

aged

Article

calcitonin blood level

clinical feature

comparative study

demography

disease duration

drug efficacy

drug mechanism

drug sensitization

enzyme inhibition

enzyme linked immunosorbent assay

female

human

major clinical study

male

priority journal

protein determination

transformed migraine

treatment outcome

treatment response

blood

chronic disease

middle aged

Migraine Disorders

predictive value

time

Acetylcholine Release Inhibitors

Adult

Biomarkers

Botulinum Toxins, Type A

Calcitonin Gene-Related Peptide

Chronic Disease

Enzyme-Linked Immunosorbent Assay

Female

Humans

Male

Middle Aged

Migraine Disorders

Predictive Value of Tests

Time Factors

Treatment Outcome