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**Greater occipital nerve vs hypothalamic stimulation to treat drug-resistant chronic cluster headache**Massimo Leone<sup>1</sup>, A Franzini<sup>2</sup>, A Proietti Cecchini<sup>1</sup>, G Broggi<sup>2</sup>, G Bussone<sup>1</sup><sup>1</sup>Neurosurgical Dept, <sup>2</sup>Neurology and Headache Centre, C. Besta National Neurological Institute, Italy

**Objective** Surgery is considered when cluster headache (CH) has a chronic course and do not respond to drugs. Greater occipital nerve (GON) stimulation has been reported to improve drug-resistant chronic CH (DR-CCH). Aim of this study was to assess efficacy and tolerability of GON stimulation as a treatment for DR-CCH. Hypothalamic stimulation was performed if GON stimulation failed.

**Methods** Ten CH patients suffering from 4–9 attacks per day did not improve to all known effective preventative drugs alone or in combination and were considered for surgery. Mean age was 44 years, 8 men, duration of chronicity was 3.2 years (mean).

**Results** GON data: The median follow up was 4 months. The results are excellent in 3 (2 pain-free). The last implanted patient cannot be evaluated because just operated. In another patient the results are poor after 4 months. In six patients stimulation failed. We observed one infection of the IPG and one electrode migration.

Hypothalamic stimulation was performed in five out of the six patients in whom GON stimulation failed: two are pain free, a 70% reduction of headache frequency was observed in two and 60% in one.

**Conclusions** In DR-CCH patients suffering from multiple attacks per day, GON stimulation was effective in a small proportion of cases. Patients not-responding to GON stimulation improved during hypothalamic stimulation. GON stimulation may be considered as a surgical option before considering more invasive procedures.