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New insights in post-traumatic cluster headache through a cohort study

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Background: Very few cases of cluster headache (CH), one of the most painful conditions known to humans, have been reported following head injury, leading to loss of work capacity and significant fiscal consequences. This study attempts to investigate the characteristics of post-traumatic CH (PTCH) and to compare its severity to primary CH
Methods: A retrospective cohort study was conducted in a tertiary headache centre at the National Hospital for Neurology and Neurosurgery (Queen Square, London, UK) between 2007 and 2017. All consecutive patients diagnosed with chronic or episodic CH that developed within 7 days of head trauma were assessed. A control cohort of 553 CH patients
included all patients who attended the headache clinic during the same period and who fulfilled the criteria for primary CH without any previous history of head trauma. Demographics of PTCH patients, characteristics of PTCH attack, concomitant headache, response to treatment and cause and mechanism of head trauma. Multivariate analysis was performed using logistic regression and resorting to the powerful Elastic net algorithm for variable selection.
Results: 26 PTCH patients were identified. Approximately 84% were diagnosed with chronic CH and 55% responded poorly to preventive treatment. Five patients suffered from concomitant chronic migraine, four of whom developed it after head trauma as well. The CH attacks were ipsilateral to the injury in all patients. According to multivariate analyses, significant association was found between PTCH and familial history of CH (OR 2.32; 95% CI, 1.4 - 3.8), chronic form (OR 1.53; 95% CI, 1.0 – 2.2), parietal location (OR 3.9; 95% CI,
2.5 – 6.1), and presence of eye oedema during attacks (OR 1.53, 95% CI, 1.0 – 2.2). PTCH patients were at a higher risk of being intractable to acute (OR 2.1, 95% CI, 1.0 – 4.6) and preventive (OR 4.9, 95% CI, 3.0 – 8.2) treatment and of suffering from associated chronic migraine (OR 5.59; 95% CI, 3.0 - 10.4).
Conclusion: This largest series of PTCH defines it as a unique entity with specific evolutive profile. After comparison to a large cohort of primary CH, we demonstrated that PTCH is more severe with more chronic forms, marked autonomic features, higher risk of intractability to treatment and associated chronic migraine in patients with family history of CH. This highlights the requirement for individualized care.

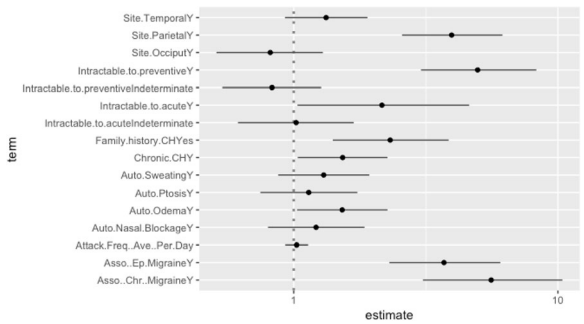

Fig. 1 (abstract P34). Estimate odds-ratio of each selected item entered into the logistic regression model (n=16)

Table 1 (abstract P34). Characteristics of PTCH according to multivariate logistic regression model

Predictive factor	OR	95% CI	p value
Family History of CH	2.32	1.41 - 3.86	0.001
Chronic CH	1.53	1.04 - 2.26	0.032
Parietal location	3.96	2.57 - 6.17	<0.001
Presence of eye oedema	1.53	1.03 - 2.27	0.035
Associated Chronic Migraine	5.59	3.08 - 10.40	< 0.001
Associated Episodic Migraine	3.71	2.30 - 6.05	< 0.001
Intractable to Acute Treatment	2.16	1.03 - 4.61	0.043
Intractable to Preventive Treatment	4.97	3.03 - 8.28	< 0.001

CI Confidence interval, *OR* Odds-ratio