

# Migraine in medical history as a marker of progressive multiple sclerosis

Adrienne Jóri-Birkás<sup>1</sup>, András Horváth<sup>1,2</sup>, Nándor Pintér<sup>1</sup>

<sup>1</sup>National Institute of Clinical Neurosciences, Budapest, Hungary

<sup>2</sup>Semmelweis University School of PhD Studies, János Szentágothai Doctoral School of Neurosciences, Budapest, Hungary

## Objectives

Multiple sclerosis (MS) is the most widespread disabling neurological disorder with a prevalence reaching 2.5 million worldwide and 400.000 in the United States. There are relapsing and remitting types of MS and progressive types, but the course is rarely predictable, especially at the moment of the first initial symptoms. However, there is an urgent need to find markers indicating rapid progression to help us to select patients where early, aggressive treatment is absolutely required. Headache is commonly seen, early symptom of MS patients; presence of migraine in the medical history is mentioned in 41%. The aim of our study was to analyze the possible connection between the presence of headache and the clinical outcome by MS patients.

## Methods

We selected 59 MS patients (40 females, age: 36.91±9.76) matching the criteria of McDonald-Barkhoff-Tintoré. Type of the headache was detected using the criteria system of the International Headache Society (IHS). 17 patients had migraine, while 17 persons have other headache types and 25 patients did not have headache in their medical history. Three patient groups were compared statistically from the viewpoints of the age of the patients, initiation and duration of MS and headache, Expanded Disability Status Scale (EDSS) scores, activity of MS and the presence of progressive forms. General linear model with Bonferroni- correction was applied for statistical analysis, age and sex were added as a covariate to the model.

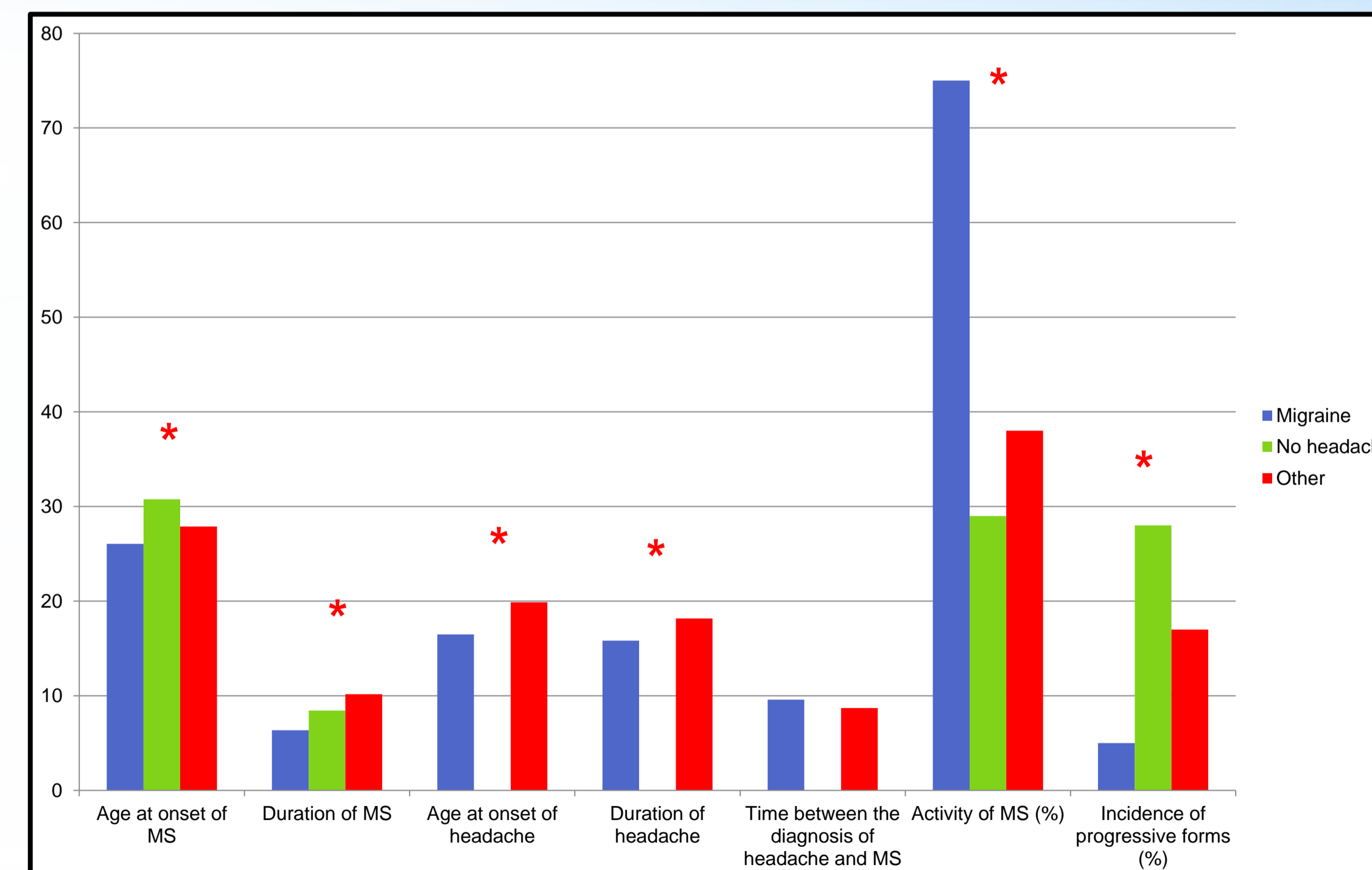
## Conclusions

- Headache is a common comorbidity of multiple sclerosis affecting more than half of the patients
- Patients with headache, especially with migraine present earlier onset for MS
- MS patients with migraine require frequent follow-up due to the abundant shubs
- Progressive MS is rarely associated with migraine symptoms
- Absence of headache in medical history might indicate infrequent but severe shubs

## Results

| Parameters                                | df | Mean square | F     | p-value |
|---|----|-------------|-------|---------|
| Age at the onset of MS                    | 4  | 496.3       | 25.39 | 0.000   |
| Duration of MS                            | 4  | 243.0       | 12.43 | 0.000   |
| Age at the onset of headache              | 3  | 82.7        | 5.48  | 0.004   |
| Duration of headache                      | 3  | 409.8       | 26.25 | 0.000   |
| Time between diagnosis of MS and headache | 3  | 49.5        | 3.07  | 0.043   |
| EDSS                                      | 4  | 3.112       | 1.795 | 0.144   |
| Activity of MS                            | 4  | 43.6        | 1.865 | 0.013   |
| Incidence of progressive forms            | 4  | 46.3        | 2.13  | 0.003   |

The table describes the results of general linear model analysis. Age and sex might have an impact on the progression of MS, so they were added as a covariate. Significant differences are indicated with red color.



28% of MS patients presented migraine and 28% reported other types of headache. Headache symptoms anticipate the MS. Patients with headache and migraine show earlier onset of MS. Patients with co-occurring migraine show more frequent relapses, however, with other headache types do not differ significantly from the normal MS group. The presence of progressive forms is reduced in MS-related migraine.