

Patent foramen ovale, interatrial septal aneurysm and clinical features in migraine with aura: a retrospective analysis.

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INTRODUCTION: Migraine is a widespread disorder with a large impact on society. Patent foramen ovale (PFO) is a common occurrence, affecting about 25 % of the population. Observational studies report PFO to be more prevalent in patients with migraine with aura (MA). However, there are conflicting data regarding the causal relationship between PFO and migraine. In addition there are not consistent scientific evidences regarding relationship between clinical features of migraine and anatomic characteristics of PFO.

MATERIALS & METHODS: We retrospectively analyzed clinical features (number of attacks per year, duration of the aura, age at aura onset) in 42 consecutive out-patients, referring to our Unit, who met criteria of MA.

We performed an initial evaluation assessing the presence of PFO and interatrial septal aneurysm (ISA).

Transcranial Doppler with agitated saline injection was used to evaluate the presence and degree of PFO. PFO was diagnosed as present if any signal was detected. The degree of PFO at rest and during Valsalva's maneuver was quantified as follows: small (1-10 microbubbles [MB]), medium (10-20 MB), large after Valsalva maneuver (>20 MB with shower at rest or curtain pattern after Valsalva) or large at rest (curtain pattern at rest), .

Nonparametric tests were run to determine if there were differences in attacks frequency (expressed in number of attacks per year), mean duration of aura (expressed in minutes), aura type (visual, sensitive, aphasic or complex) and age at aura onset between patients with and without PFO and/or ISA.

RESULTS: The PFO_present and PFO_absent groups were respectively composed of 22 patients (52,4%, 2 males, 20 females) and 20 patients (47,6%, 4 males, 16 females). There were not significant differences between the demographic features of the two groups. In the PFO_present group, 12 patients had a medium to large PFO, 6 patients (14,3% of total sample, 1 male, 5 females) had ISA, 23 patients (54,8%) had a visual aura while 19 of them (45,2%) had a complex aura. Age at aura onset is inferior in the PFO_present group ($p= 0.006$) and wider the degree of PFO the less is the age at aura onset (Figure 1).

Otherwise median attacks frequency, duration of aura and type of aura were not significantly different between the two groups.

Moreover a higher degree of PFO was associated with lower age at aura onset, more frequent attacks and with the presence of ISA.

	Median	Min	Max	Standard dev
Age (years)	35,5	16	66	11,4
Aura duration (minutes)	40,5	10	120	27,9
Age of aura onset (years)	24,8	8	45	12,3
Frequency (number of attacks/year)	11,5	1	120	20,3

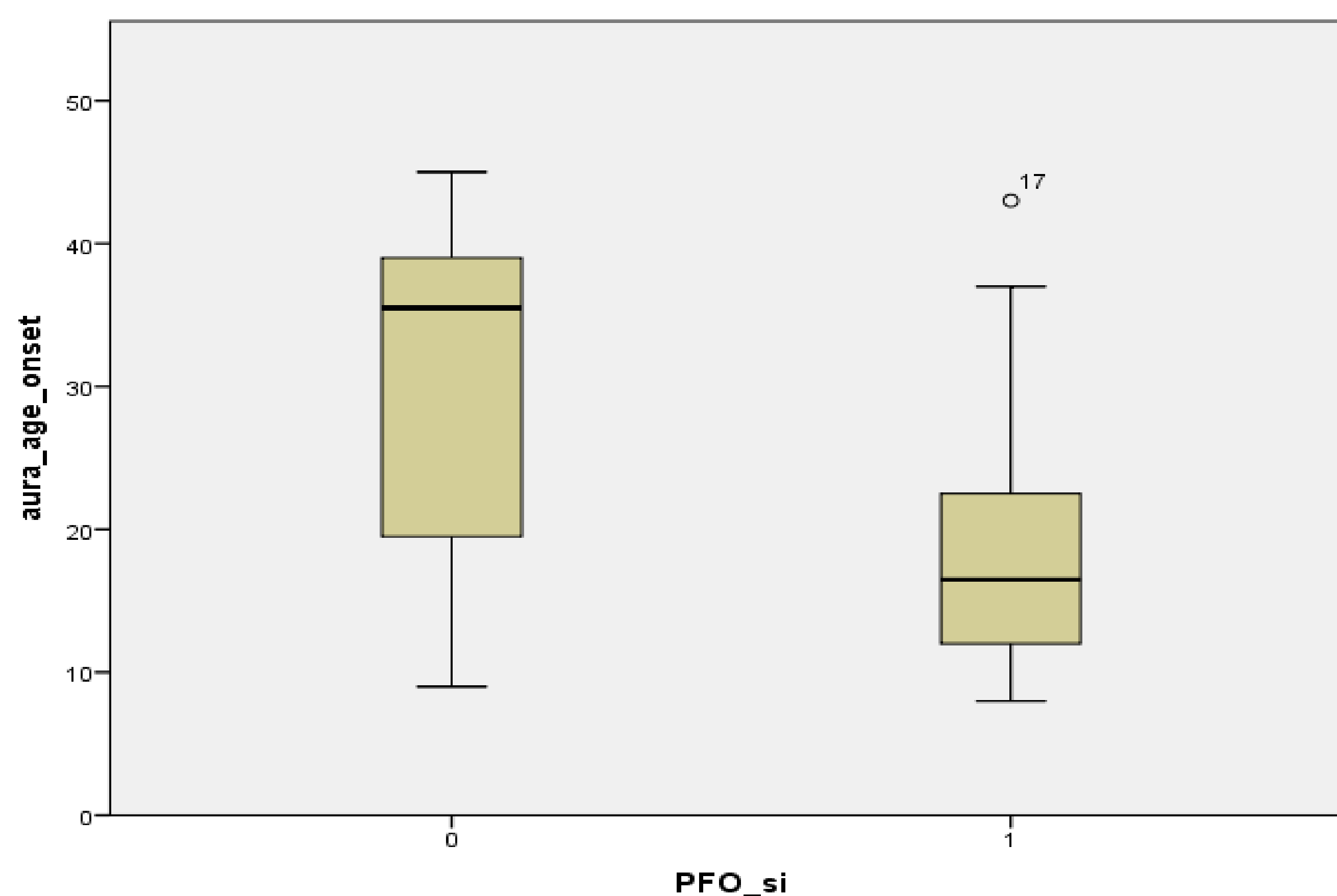


Figure 1 . Correlation between age at aura onset and presence\absence of PFO

CONCLUSIONS: Age at aura onset in patients affected by MA may be considered an important anamnestic information to collect in this group of patients. Early onset of the aura is strongly associated with the presence of PFO and with a PFO of higher degree, with relevant implications in clinical practice. Moreover a PFO of higher degree is strongly associated with a higher frequency of attacks. To our knowledge it is the first case-series demonstrating this relationship between migraine features and PFO.