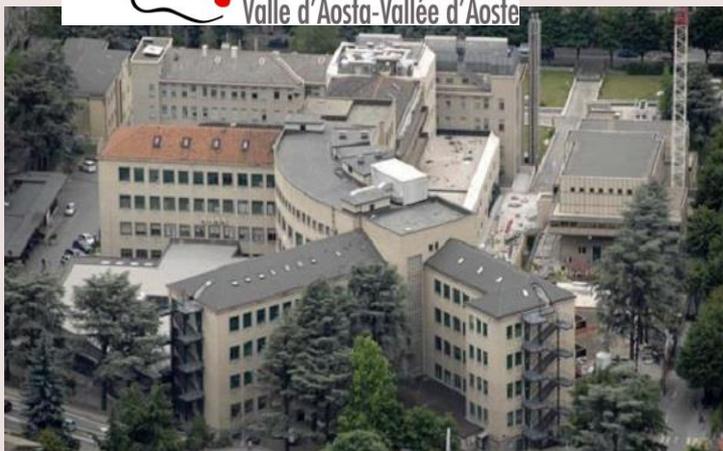




31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019



WE DON'T HAVE ENOUGH
EVIDENCE, WE TRUST OUR
EXPERIENCE

*A patient with migraine, positive
MR and PFO: what to do?*

Let's close the PFO

Paolo Scacciatella
SC Cardiologia - Cardiologie
Ospedale Regionale - Hôpital Régional U. Parini
Aosta - Aoste



31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019

Global, regional, and national burden of migraine and tension-type headache, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016

Lancet Neurol 2018; 17: 954–76

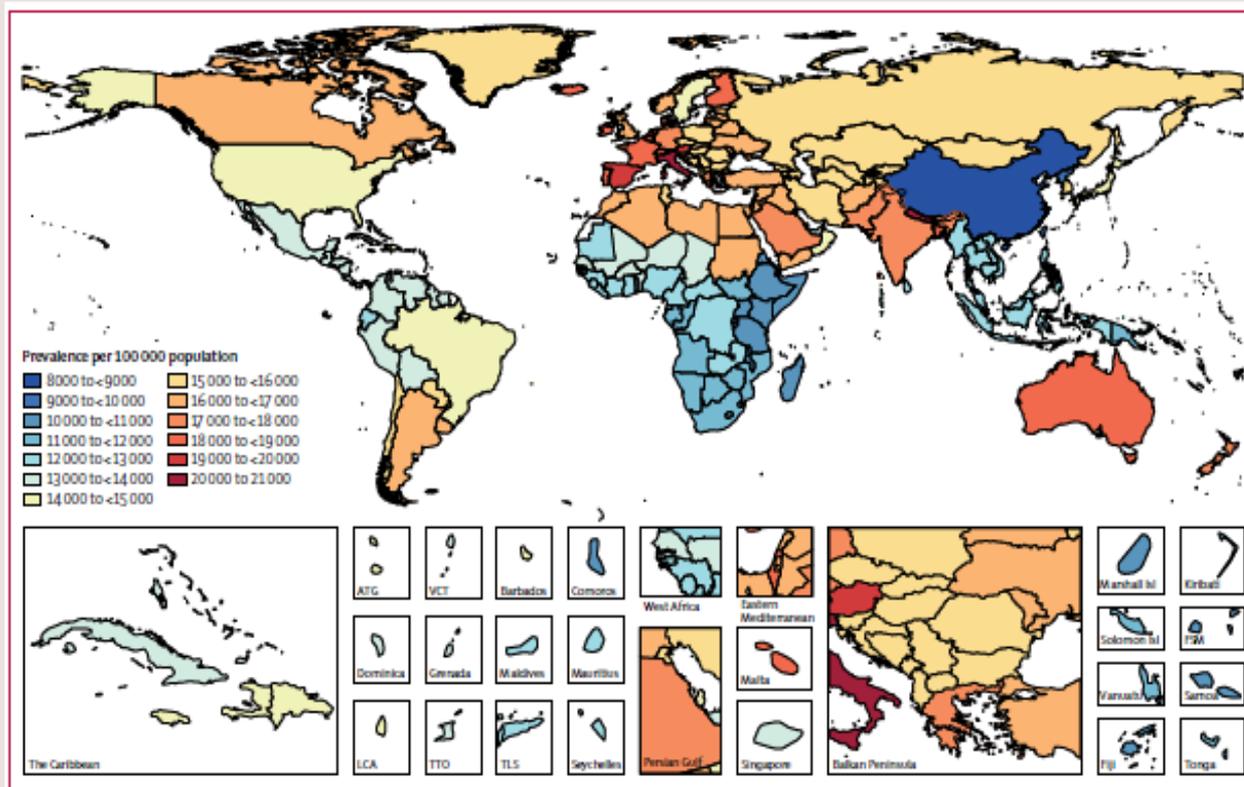


Figure 1: Age-standardised prevalence of migraine per 100 000 population by location for both sexes, 2016

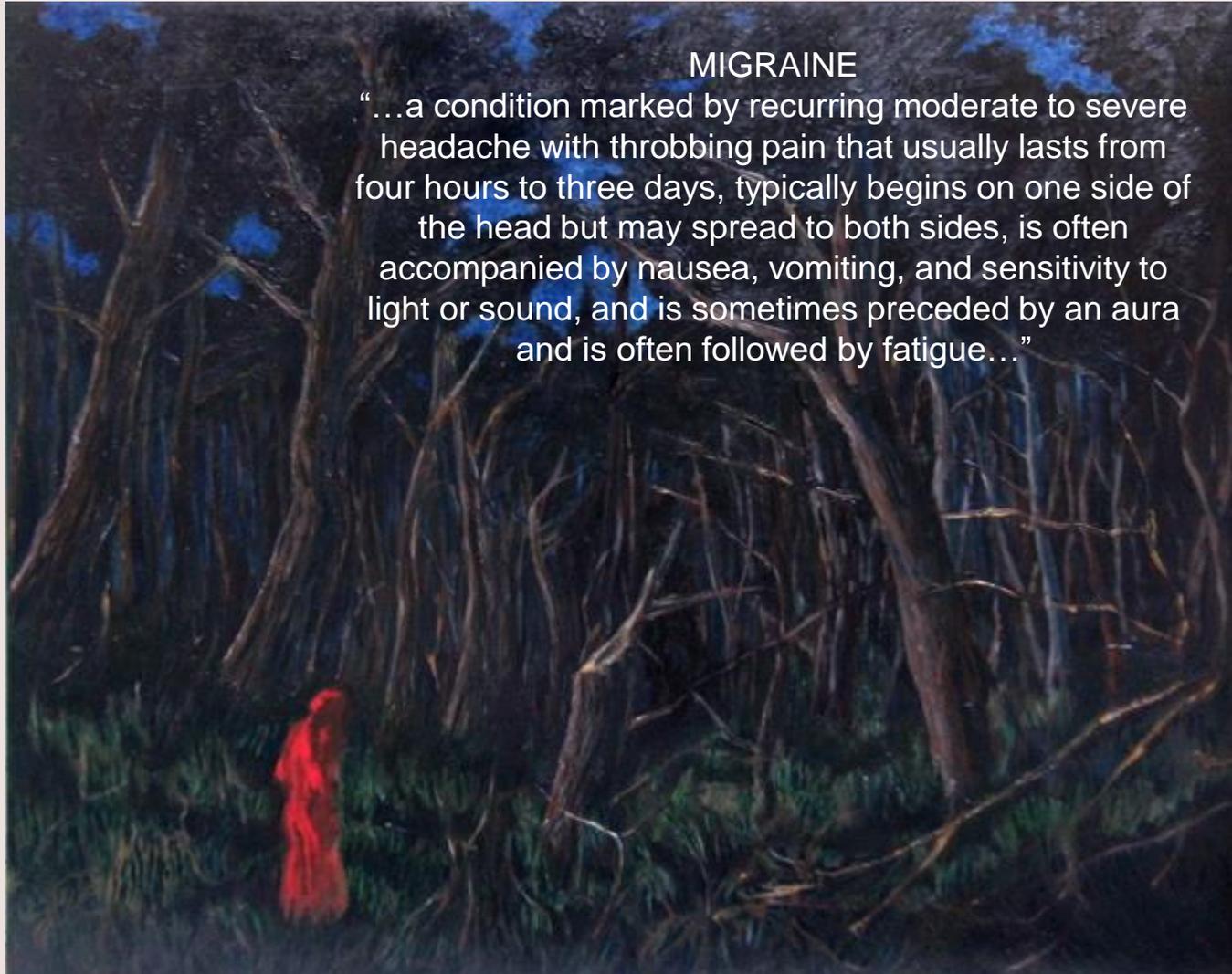


31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019

MIGRAINE

“...a condition marked by recurring moderate to severe headache with throbbing pain that usually lasts from four hours to three days, typically begins on one side of the head but may spread to both sides, is often accompanied by nausea, vomiting, and sensitivity to light or sound, and is sometimes preceded by an aura and is often followed by fatigue...”





31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019

A meta-analysis of case-control studies of the association of migraine and patent foramen ovale

Hisato Takagi (MD, PhD)*, Takuya Umemoto (MD, PhD), for the ALICE (All-Literature Investigation of Cardiovascular Evidence) Group

Journal of Cardiology 67 (2016) 493-503

On the basis of the first meta-analysis of 21 case-control studies enrolling >5500 participants, we confirmed that PFO is associated with 3.4-fold migraine-with-aura and 2.5-fold migraine-without-aura prevalence but unassociated with migraine-without-aura prevalence. The association of migraine with (and with/without) aura and PFO was robust, even pooling not only unadjusted but also adjusted (although small number of) relative risk estimates.



31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019

Paradoxical Air Microembolism Induces Cerebral Bioelectrical Abnormalities and Occasionally Headache in Patent Foramen Ovale Patients With Migraine

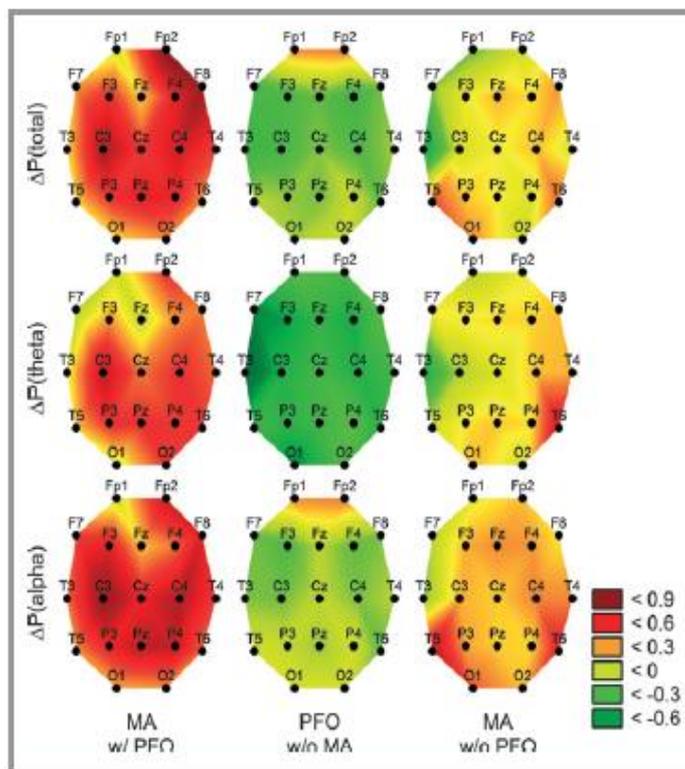


Figure 1. Cerebral air embolism induced EEG power changes only in MA patients with PFO, not in PFO patients without migraine or MA patients without PFO. Emboli-induced spectral power changes (ΔP)

Changes in cerebral bioelectrical activity (i.e. cortical spreading depressions, CSDs) may be triggered by:

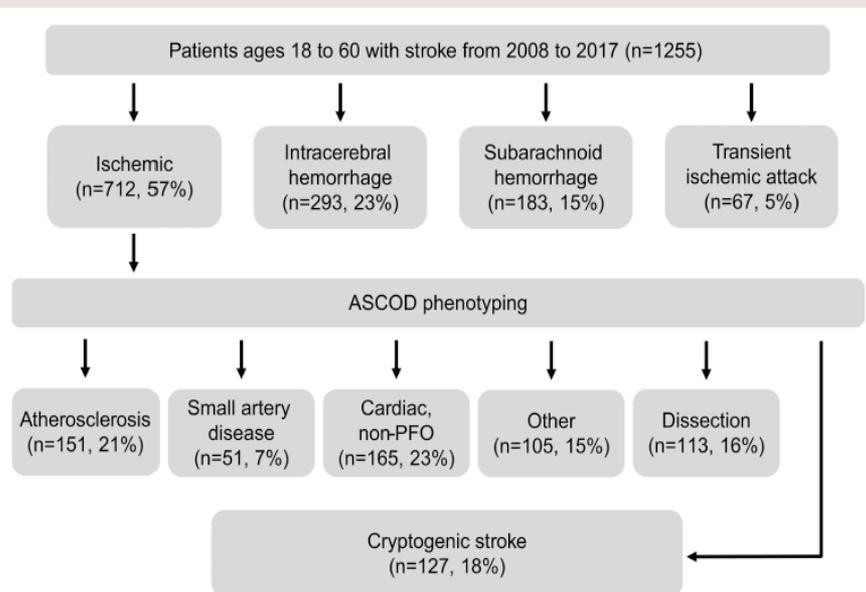
- paradoxical cerebral thromboemboli
- and/or the direct passage of metabolites into the systemic circulation

resulting in irritation of the trigeminal nerve and brain's vascular network



31 GIORNATE CARDIOLOGICHE TORINESI

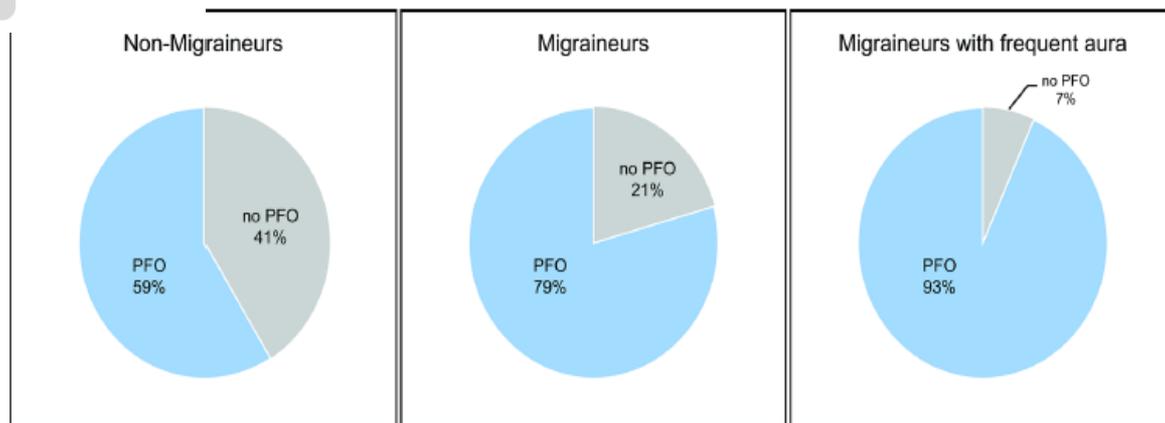
TURIN
October
24th-26th
2019



Published in final edited form as:

Stroke. 2018 May ; 49(5): 1123–1128. doi:10.1161/STROKEAHA.117.020160.

The Frequency of Patent Foramen Ovale and Migraine in Patients with Cryptogenic Stroke



%, percentage of patients with and without PFO in each clinical subgroup

Figure 3.
Prevalence of PFO in Patients with Cryptogenic Stroke



31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019

Epidemiological
Physiopatological
Clinical

PLAUSIBILITY



31 GIORNATE CARDIOLOGICHE TORINESI

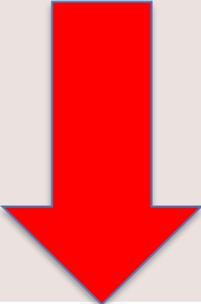
TURIN
October
24th-26th
2019

Migraine and structural changes in the brain

A systematic review and meta-analysis

Neurology® 2013;81:1260-1268

Conclusions and future perspectives. The present review suggests that migraine may be a risk factor for structural changes in the brain. In comparison with nonmigraine controls, migraineurs have more WMAs, ILLs, and volumetric changes in GM and WM regions. The evidence on relationship to attack frequency and disease duration is equivocal. At present, the clinical and functional significance of these brain lesions is uncertain. Guidelines



MRI. Only patients with atypical headache, a recent change in headache pattern, other symptoms (such as seizures), or focal neurologic symptoms or signs are recommended for MRI of the brain.

Patients with WMAs can be reassured. Patients with ILLs should be evaluated for stroke risk factors.

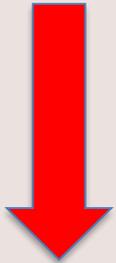
CLINICAL APPROACH



31 GIORNATE CARDIOLOGICHE TORINESI

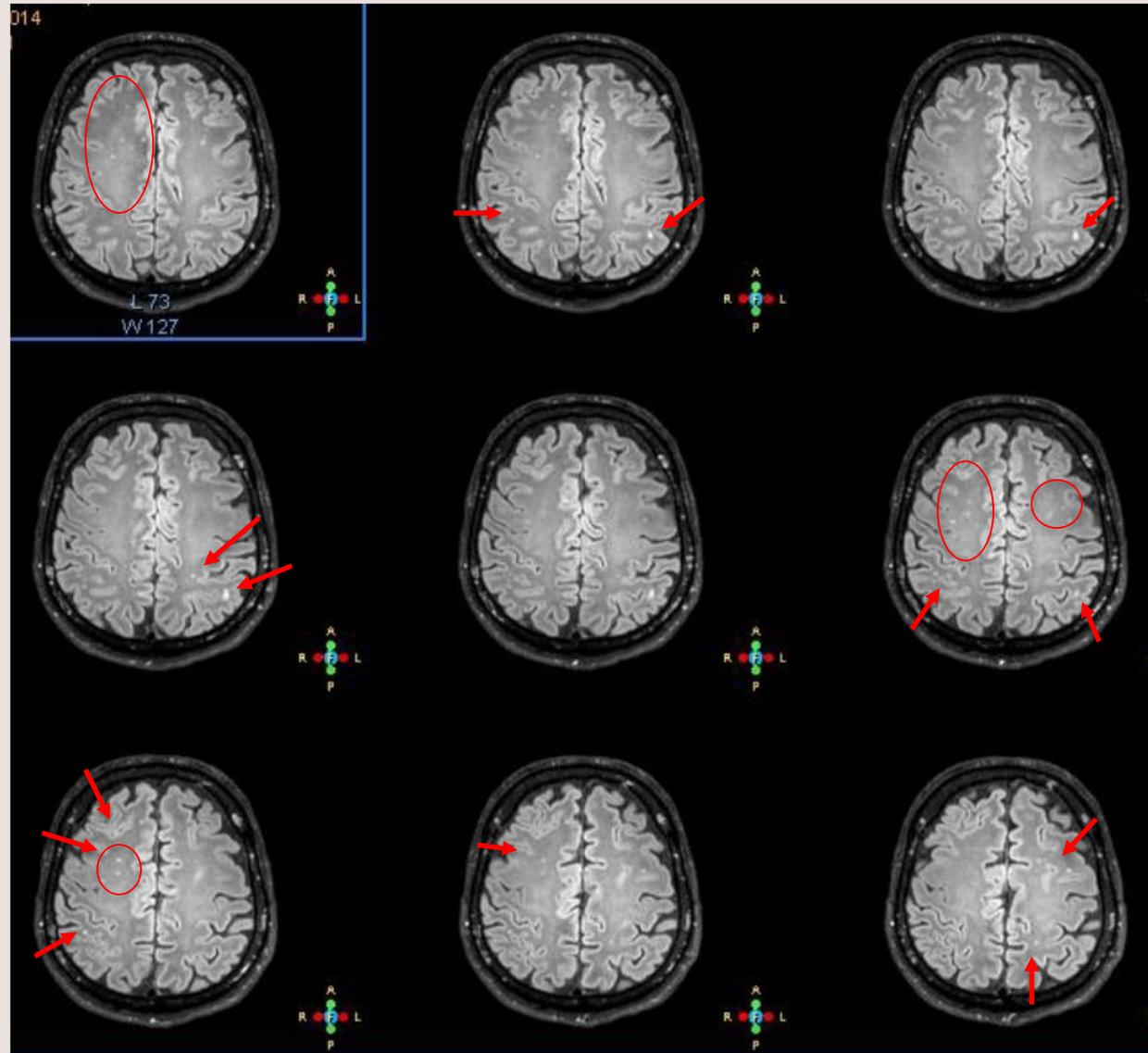
TURIN
October
24th-26th
2019

*Pt 40 years old
Migraine WA
No neurol disord
Incidental MR +*



...a odds
matter ...

- SIZE
- SITE





31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019

The clinical importance of white matter hyperintensities on brain magnetic resonance imaging: systematic review and meta-analysis

BMJ 2010;341:c3666

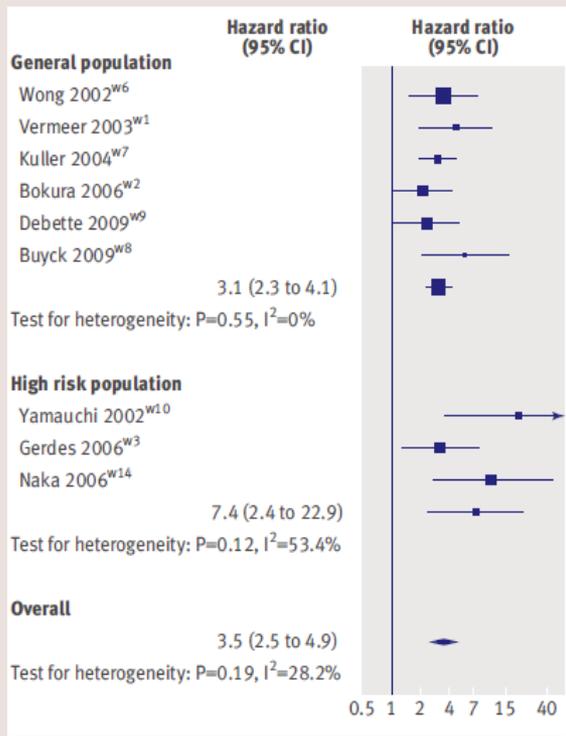


Fig 2 | Inverse variance meta-analysis of studies testing association of white matter hyperintensities with incident stroke

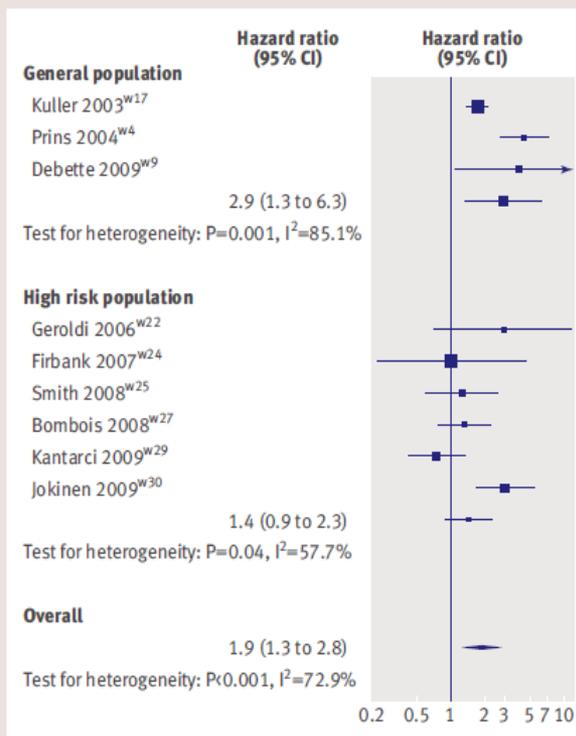


Fig 3 | Inverse variance meta-analysis of studies testing association of white matter hyperintensities with incident dementia

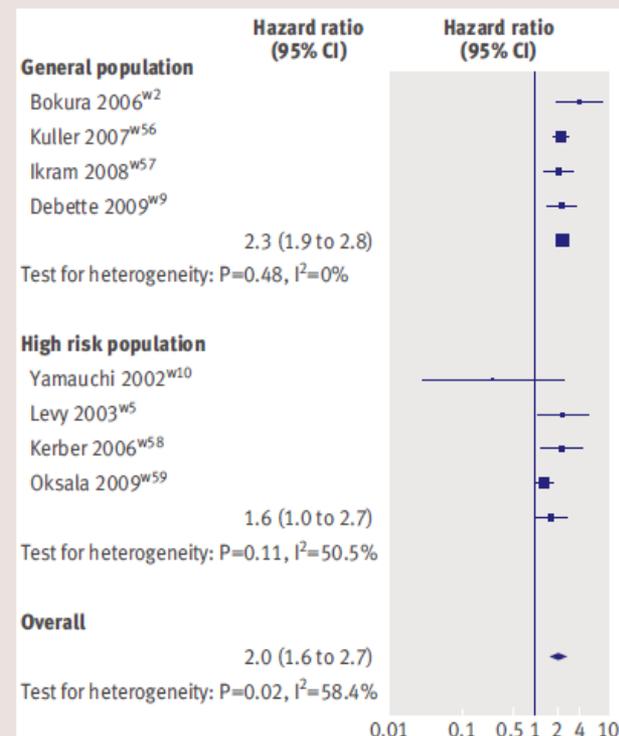


Fig 4 | Inverse variance meta-analysis of studies testing association of white matter hyperintensities with mortality



31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019

 ESC
European Heart Journal (2018) 00, 1–14
European Society doi:10.1093/eurheartj/ehy649
of Cardiology

EXPERT REVIEW

European position paper on the management of patients with patent foramen ovale. General approach and left circulation thromboembolism



Christian Pristipino^{1*}, Horst Sievert^{2,3}, Fabrizio D'Ascenzo⁴, Jean Louis Mas⁵, Bernhard Meier⁶, Paolo Scacciatella⁴, David Hildick-Smith⁷, Fiorenzo Gaita⁴, Danilo Toni⁸, Paul Kyrle⁹, John Thomson¹⁰, Genevieve Derumeaux¹¹, Eustaquio Onorato¹², Dirk Sibbing¹³, Peter Germonpré¹⁴, Sergio Berti¹⁵, Massimo Chessa¹⁶, Francesco Bedogni¹⁶, Dariusz Dudek¹⁷, Marius Hornung², and Jose Zamorano¹⁸, joint task force of European Association of Percutaneous Cardiovascular Interventions (EAPCI), European Stroke Organisation (ESO), European Heart Rhythm Association (EHRA), European Association for Cardiovascular Imaging (EACVI), Association for European Paediatric and Congenital Cardiology (AEPC), ESC Working group on GUCH, ESC Working group on Thrombosis, European Haematological Society (EHA), European Underwater and Baromedical Society (EUBS)

Definitions of PFO-related left circulation thromboembolism

PFO has been associated with left circulation thromboembolism to several organs;³⁰ therefore we promote the use of standardised definitions.

Cryptogenic ischaemic left circulation embolisms are defined as any definite ischaemia (symptomatic or asymptomatic) occurring in an arterial bed which lacks a known cause despite investigation. Patients presenting with this clinical picture should be screened for the presence or absence of a PFO. However, when a PFO is thought likely to be implicated in a cryptogenic embolism, the event should be classified as PFO-related instead of cryptogenic.³¹ Current classifications do not yet generally include this aspect.^{32–35}

TYPE OF STATEMENT

Strong statement for the intervention

POSITION

The position of our societies is to perform percutaneous closure of a PFO in carefully selected patients aged from 18 to 65 years with a confirmed cryptogenic stroke, TIA, or systemic embolism and an estimated high probability of a causal role of the PFO as assessed by clinical, anatomical and imaging features.

STATEMENTS



31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019

Improvement of Migraine After Patent Foramen Ovale Percutaneous Closure in Patients With Subclinical Brain Lesions

A Case-Control Study

Carlo Vigna, MD, FESC,* Nicola Marchese, MD,* Vincenzo Inchingolo, MD,†

JACC: CARDIOVASCULAR INTERVENTIONS

© 2009 BY THE AMERICAN COLLEGE OF CARDIOLOGY FOUNDATION
PUBLISHED BY ELSEVIER INC.

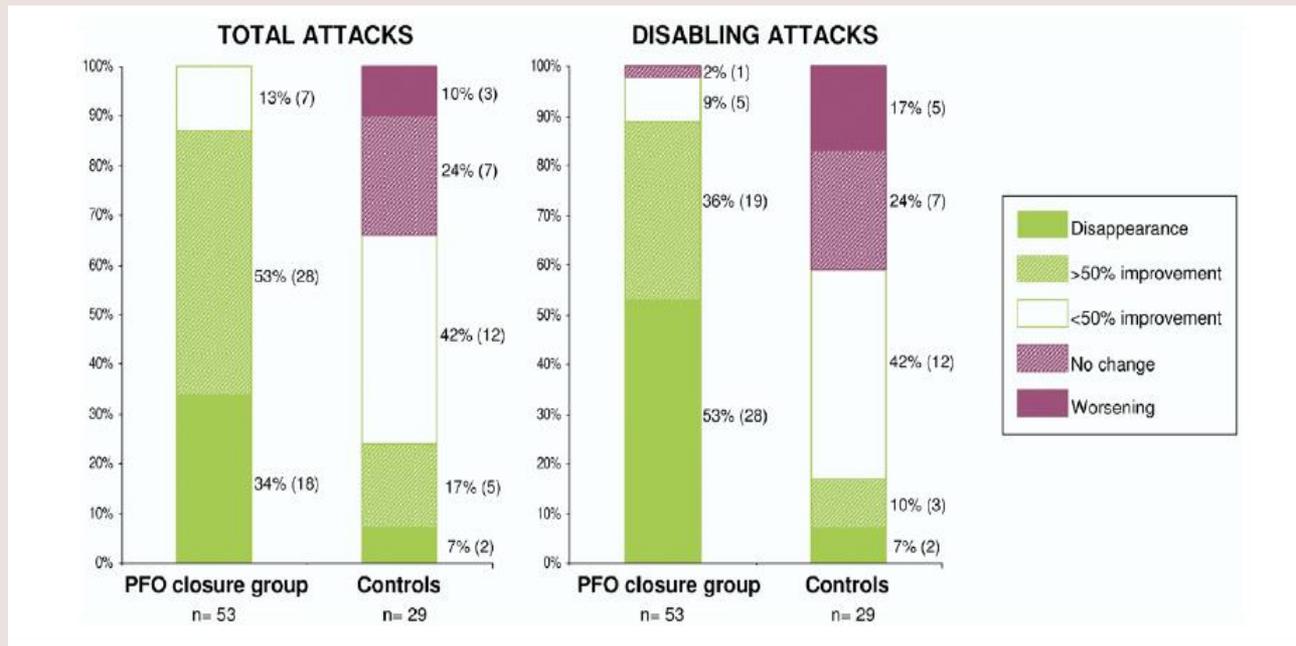


Figure 3. Clinical Results in PFO Closure Group and in Controls

Clinical results at 6-month follow-up compared with the 6-month evaluation period according to treatment allocation. **Values next to bars** refer to the percentage and the absolute number of patients in every clinical subgroup. PFO = patent foramen ovale.



31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019

Catheterization and Cardiovascular Interventions 75:494-504 (2010)

Systematic Review and Meta-Analysis of Currently Available Clinical Evidence on Migraine and Patent Foramen Ovale Percutaneous Closure: Much Ado About Nothing?

Gianfranco Butera,^{1*} MD, PhD, Giuseppe G. L. Biondi-Zoccai,² MD, Mario Carminati,¹ MD,

Review: Patent foramen ovale and migraine (Version 01)
Comparison: 02 PFO and migraine
Outcome: 03 Rate of cure or improvement

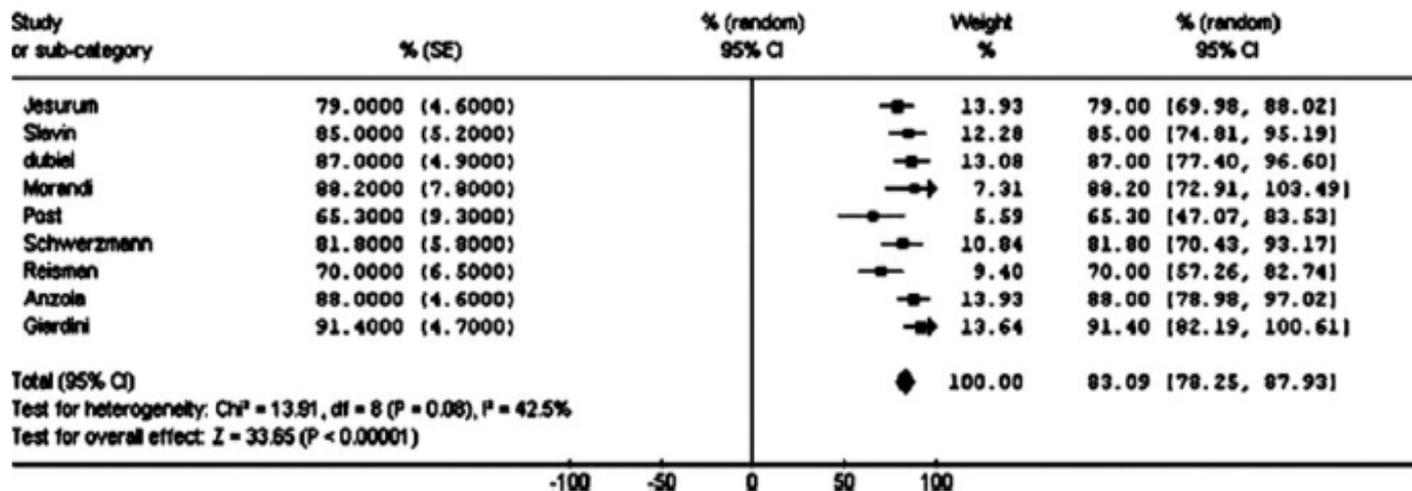


Fig. 3. Forest plot of the rate of cure or improvement among patients with patent foramen ovale being treated with percutaneous closure.



31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019

«The Migraine Policy of my Center»

Outside of specific trials, percutaneous closure of a PFO is proposed on a case-by-case basis, after an in-depth multidisciplinary evaluation, in carefully-selected patients suffering from migraines with aura and MR signs suggesting clinical or silent cerebrovascular disease

HEART and BRAIN Team



31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019

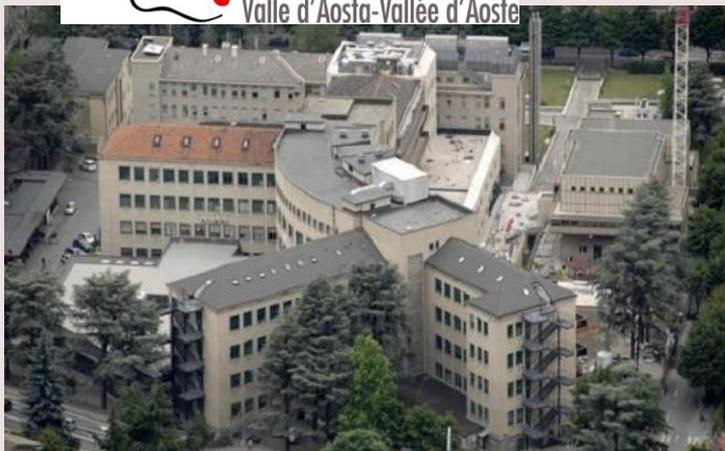
**A patient with migraine,
positive MR (*suggestive for embolic lesions*)
and PFO: what to do?**

After a Heart and Brain Team full evaluation
Let's close the PFO



31 GIORNATE CARDIOLOGICHE TORINESI

TURIN
October
24th-26th
2019



Grazie

Paolo Scacciatella
pscacciatella@ausl.vda.it
www.ausl.vda.it