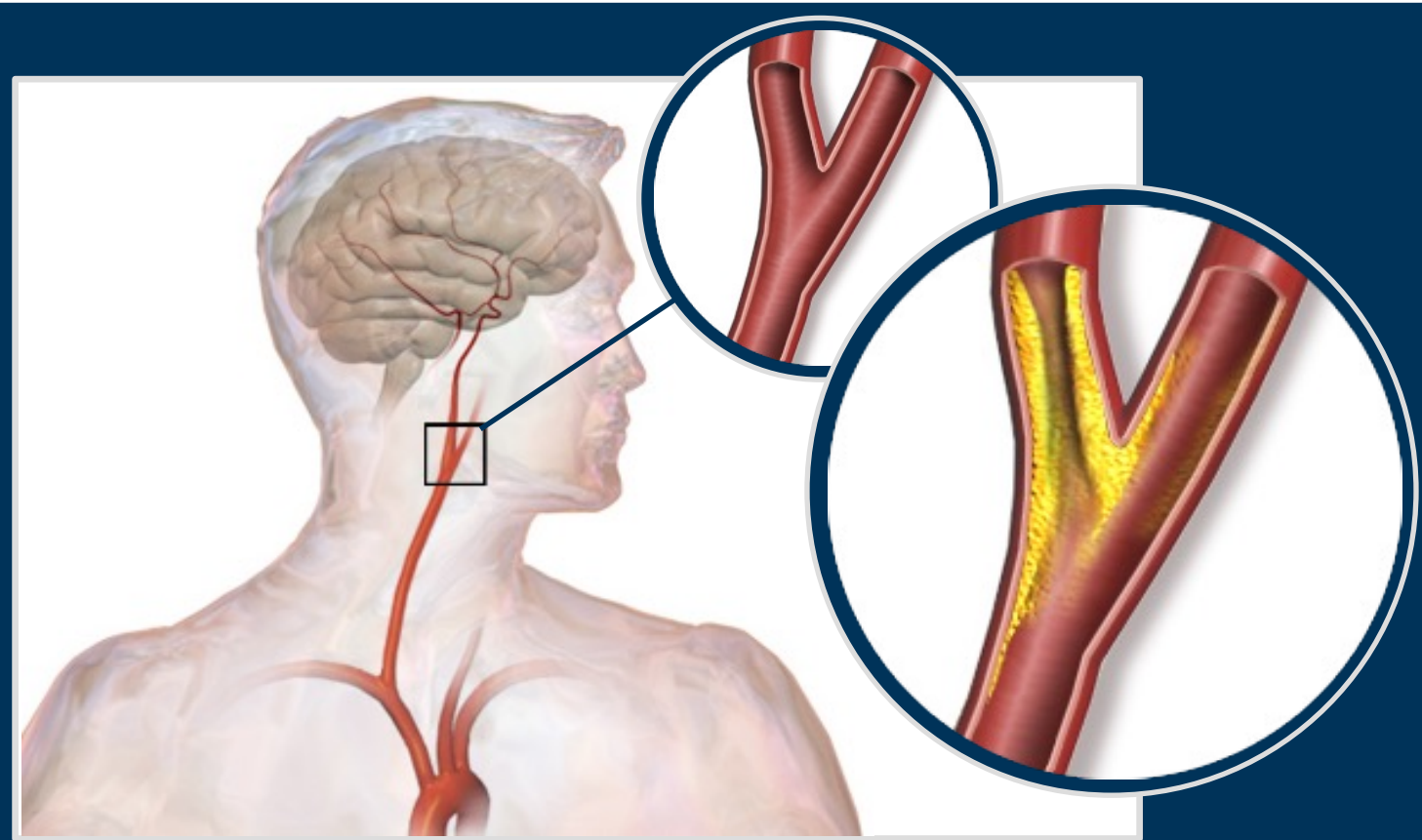


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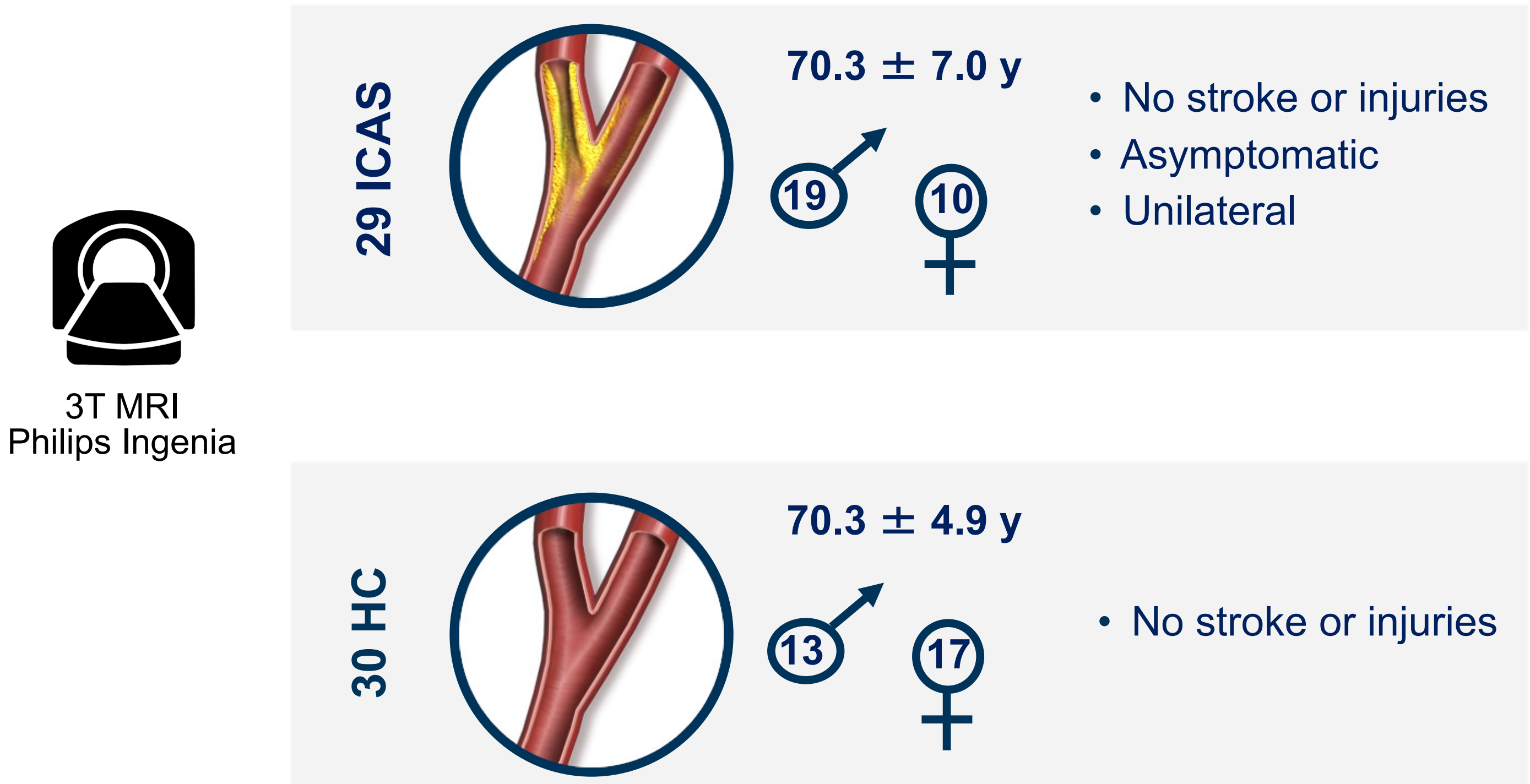
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Purpose:

- Internal carotid artery stenosis (ICAS) - even in 'asymptomatic' patients - is known to cause hemodynamic changes and cognitive deficits^{1,2,3,4}
- Deeper understanding of localization and spatial extent of hemodynamic impairments could improve treatment decisions
- Spatial covariance patterns of cerebral blood flow (CBF) have proven helpful to elucidate links between local perfusion alterations and cognitive as well as/or clinical performance in other neurologic pathologies^{5,6}
- **Aim: To investigate whether a specific CBF pattern can be derived in ICAS patients and to understand the relationship of these changes with clinical characteristics**

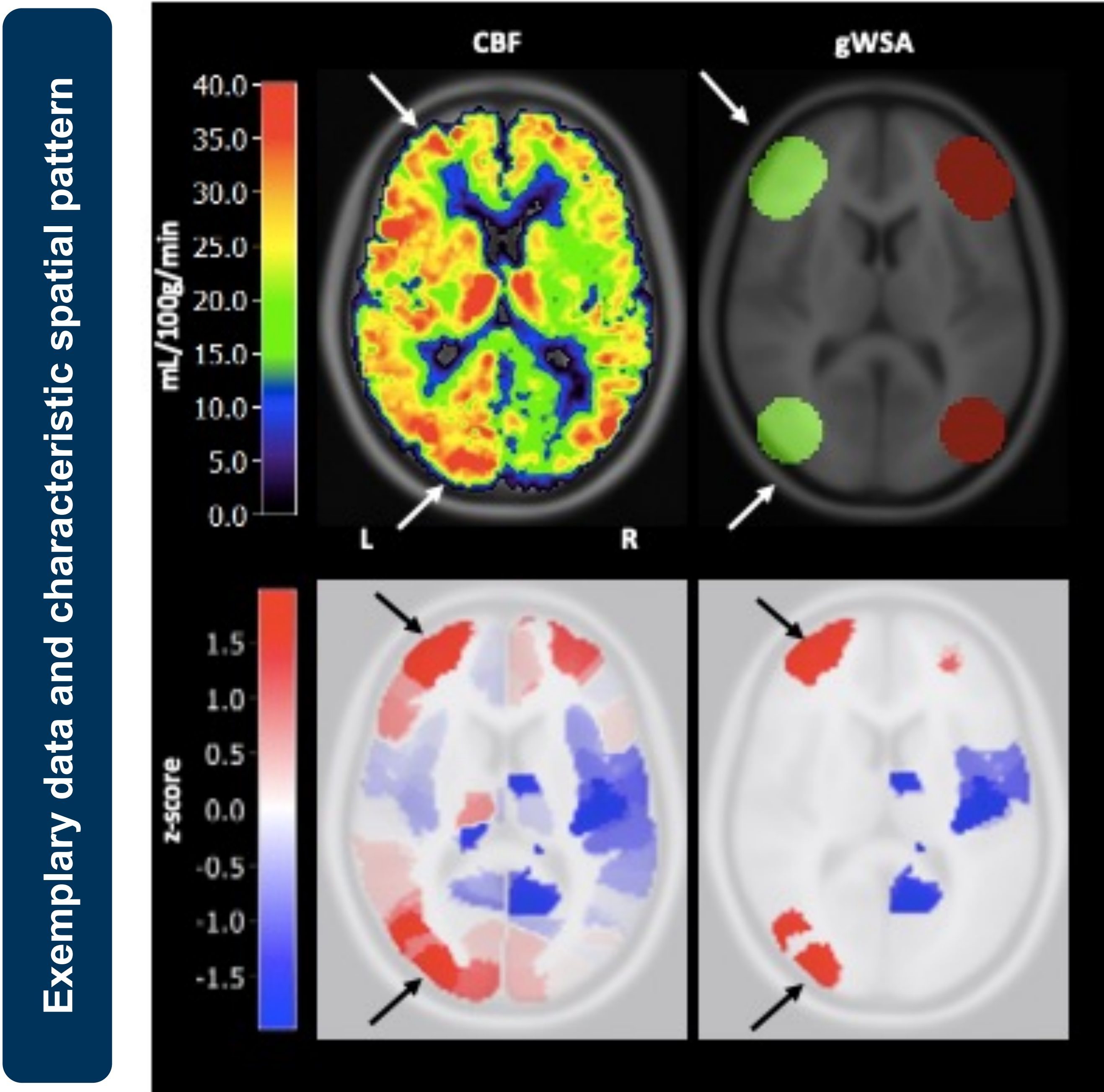


Methods:

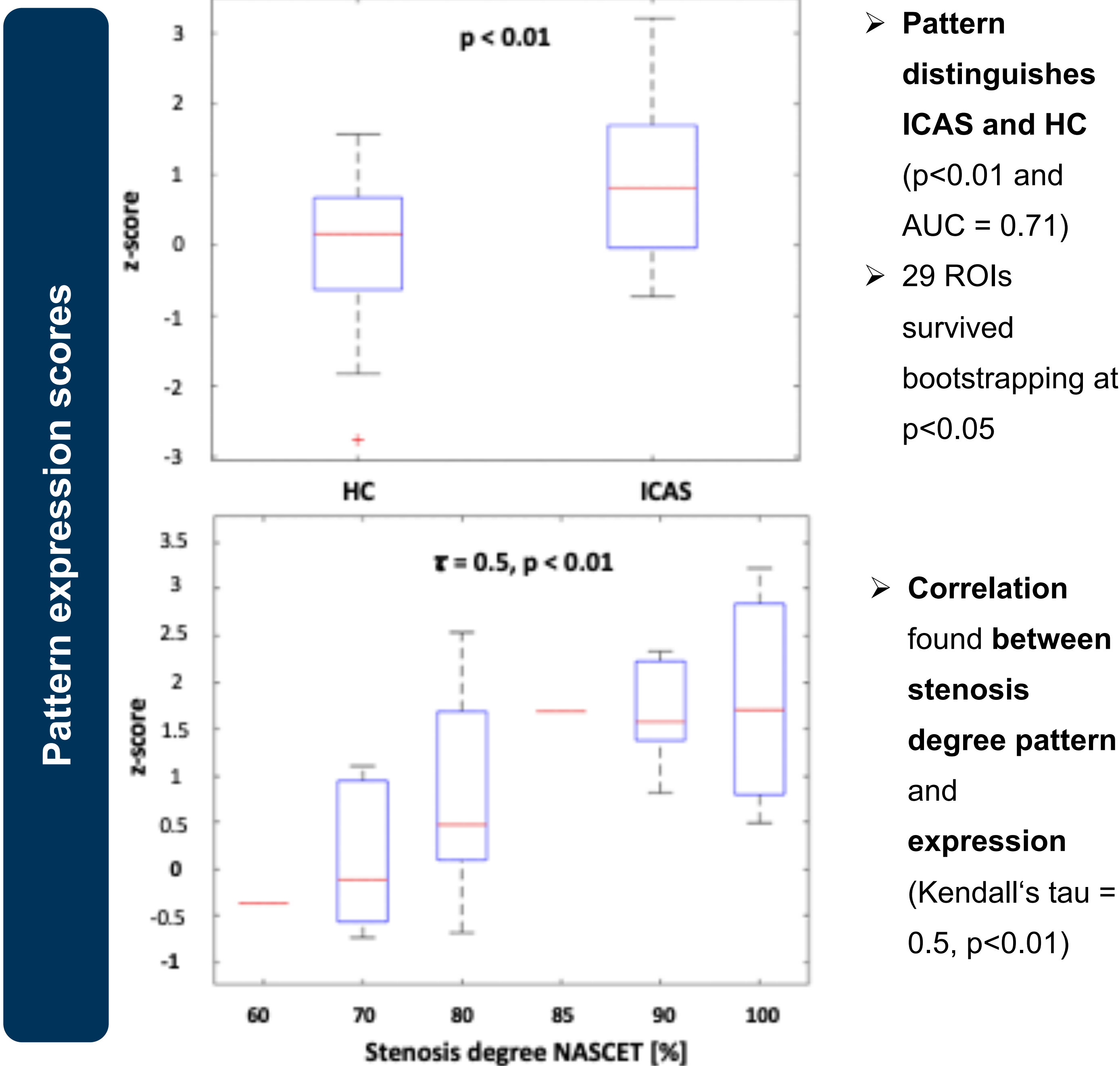


- CBF maps by pCASL according to latest recommendations^{2,7}
- Principal component analysis (PCA) applied to derive spatial covariance patterns following an established method^{5,6,8}
- Disease-related components combined in logistic regression model^{5,8} and stable regions contributing to pattern established by bootstrapping⁶
- Pattern scores were correlated with NASCET stenosis degree

Results I:



Results II:



Discussion:

- Spatial CBF pattern specific for patients was found
- Bootstrapping indicated multiple stable areas
- Ipsilateral hypoperfusion and contralateral WSA⁹ involvement
- Disease pattern associated with degree of stenosis as expected

Conclusions:

- Characteristic perfusion pattern identified in asymptomatic unilateral ICAS
- Greater stenosis degree resulted in increased pattern expression

References:

- 1: Martinic-Popovic et al., Stroke Res Treat 2012
- 2: Kaczmarz et al., JCBFM 2021
- 3: Götter et al., JCBFM 2019
- 4: Götter et al., JCBFM 2020
- 5: Melzer et al., Brain 2011
- 6: Habeck et al., Neuroimage 2008
- 7: Alsop et al., Magn Reson Med 2015
- 8: Spetsieris et al., Neuroimage 2009
- 9: Kaczmarz et al., Neuroradiology 2018

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