PHASES score

The PHASES (Population, Hypertension, Age, Size, Earlier subarachnoid hemorrhage, Site) score was developed to facilitate risk stratification for the unruptured intracranial aneurysm management.

Go to the calculator https://qxmd.com/calculate/calculator_464/phases-score

see also Unruptured intracranial aneurysm treatment score.

5 year Ruptured intracranial aneurysm FROM Unruptured intracranial aneurysm.

see also ISUIA calculator

see also UCAS Calculator

Indicators

Population

0 points: North American, European (other than Finnish)

3 points: Japanese

5 points: Finnish

Hypertension

0 points: No

1 point: Yes

Age

0 points: < 70 years

1 point: ≥ 70 years

Size of aneurysm

0 points: < 7.0 mm

3 points: 7.0 - 9.9 mm

6 points: 10.0 - 19.9 mm

10 points: ≥ 20 mm

Earlier SAH from another aneurysm

0 points: No

1 point: Yes

Site of aneurysm

0 points: ICA

2 points: MCA

4 points: ACA / Pcom / posterior

5yr rupture risk

(based on cumulative risk score)

≤ 2 points: 0.4%

3 points: 0.7%

4 points: 0.9%

5 points: 1.3%

6 points: 1.7%

7 points: 2.4%

8 points: 3.2%

9 points: 4.3%

10 points: 5.3%

11 points: 7.2%

≥ 12 points: 17.8% [1].

Higher PHASES scores were associated with an increased risk of aneurysm growth. Because higher PHASES scores also predict aneurysm rupture, the findings suggest that aneurysm growth can be used as surrogate outcome measure of aneurysm rupture in follow-up studies on risk prediction or interventions aimed to reduce the risk of rupture [2].

A reasonable percentage of ruptured aneurysms have a low calculated PHASES score and these aneurysms may have been managed conservatively should they have presented incidentally prior to rupture. The majority of ruptured aneurysms also had a low ELAPSS score and were at low risk of future growth. The use PHASES score and ELAPSS score alone when making treatment decisions could result in many aneurysms being treated conservatively or undergoing remote surveillance despite rupture potential [3].

Smoking and family history are risk factors for sIA formation and aneurysmal SAH at young age. Young aneurysmal SAH patients had lower PHASES scores and often rupture from a small sIA, suggesting need for more aggressive management [4].

Wang et al. analyzed 1514 sIAs in a Chinese cohort of 1216 patients, including 651 ruptured and 863 unruptured sIAs. Median aneurysm size was 5.7 mm for ruptured aneurysms, with 66.1% <7 mm in maximal diameter, and 40.2% measuring <5 mm. The median PHASES score of ruptured sIAs was 5. In multivariate analysis, male sex, hypertension, locations other than the internal carotid artery, irregularity (lobulated or with blebs), and higher AR were independently associated with rupture status (OR for irregularity, 2.88, 95% CI 2.20 to 3.77, p<0.001; OR for AR, 1.12, 95% CI 1.01 to 1.24, p=0.036). However, the maximal diameter was not significantly associated with rupture status (p=0.72).

In this cohort, ruptured saccular intracranial aneurysm were frequently smaller than 7 mm. Shape-related features, such as irregularity and higher AR, were associated with the ruptured status of sIAs, irrespective of diameter. PHASES seems to be inadequate in sIA risk stratification. Shape related parameters may be further investigated in prospective studies [5].

1)
Greving, J. P., Wermer, M. J. H., Brown, R. D., Morita, A., Juvela, S., Yonekura, M., et al. (2014). Development of the PHASES score for prediction of risk of rupture of intracranial aneurysms: a pooled analysis of six prospective cohort studies. Lancet Neurology, 13(1), 59-66. doi:10.1016/S1474-4422(13)70263-1
2)
Backes D, Vergouwen MD, Groenestege AT, Bor AS, Velthuis BK, Greving JP, Algra A, Wermer MJ, van Walderveen MA, terBrugge KG, Agid R, Rinkel GJ. PHASES Score for Prediction of Intracranial Aneurysm Growth. Stroke. 2015 Mar 10. pii: STROKEAHA.114.008198. [Epub ahead of print] PubMed PMID: 25757900.
3)
Hilditch CA, Brinjikji W, Tsang AC, Nicholson P, Kostynskyy A, Tymianski M, Krings T, Radovanovic I, Pereira VM. Application of PHASES and ELAPSS scores to ruptured cerebral aneurysms: how many would have been conservatively managed? J Neurosurg Sci. 2018 May 28. doi: 10.23736/S0390-5616.18.04498-3. [Epub ahead of print] PubMed PMID: 29808636.
4)
Räisänen S, Frösen J, Kurki MI, Huttunen T, Huttunen J, Koivisto T, Helin K, von Und Zu Fraunberg M, Jääskeläinen JE, Lindgren AE. Impact of Young Age on the Presentation of Saccular Intracranial Aneurysms: Population-Based Analysis of 4082 Patients. Neurosurgery. 2017 Jun 9. doi: 10.1093/neuros/nyx305. [Epub ahead of print] PubMed PMID: 28605505.
5)
Wang Y, Cheng M, Liu S, Xie G, Liu L, Wu X, Malhotra A, Mossa-Basha M, Zhu C. Shape related features of intracranial aneurysm are associated with rupture status in a large Chinese cohort. J Neurointerv Surg. 2021 Apr 21:neurintsurg-2021-017452. doi: 10.1136/neurintsurg-2021-017452. Epub ahead of print. PMID: 33883209.