Response to Letter Regarding Article, “Lifelong Rupture Risk of Intracranial Aneurysms Depends on Risk Factors: A Prospective Finnish Cohort Study”

We thank Drs Kirchoff-Torres and Labovitz for their interest in our article.1 The authors fear that the presented results may be overgeneralized. We share the view that the applicability of the results of any cohort study to individuals or ill-defined populations should be done cautiously. In fact, this is a general recommendation for critical appraisals of cohort studies. In the following, we try to further conceptualize and clarify the results.

First, Kirchoff-Torres and Labovitz are concerned about the reliability of the lifelong unruptured intracranial aneurysm (UIA) rupture risk estimation of 29%, especially if used in predicting the rupture risk in patients with UIAs. We agree that such a rough overall estimate should not be used in individual risk predictions for a future subarachnoid hemorrhage (SAH). If this is the case, our results have been overgeneralized, indeed. The figure 29% has been reported only for epidemiological purposes. As an anecdote, the Finnish adult population has ≈90,000 UIAs (2%–3% prevalence) and ≈600 aneurysmal SAHs annually. This means that the lifelong rupture risk is ≈30% with a constant IA rupture rate, population structure, risk factor status, and life expectancy of 45 years after the age of 30 years.

Second, Kirchoff-Torres and Labovitz stated that because the previous SAH is an independent risk factor for a future SAH, external validity in our study is questionable. Their comment relies on a (overgeneralized) misconception about previous natural history studies.2,3 The cited short-term studies with small number of SAHs (32 [2.2% of the cohort]2 and 19 [4.5% of the cohort]3 SAHs) did not adjust their analyses for risk factors (studies had no or limited data on lifestyle risk factors), and thus it is impossible to know whether a previous SAH was an independent risk factor in these studies.2,3 If hypertensive patients with a previous SAH and UIAs continue smoking, the risk of another SAH in the future is likely increased. If smoking and hypertension are eliminated, this is unlikely true. Shortly, if a study has no internal validity, it has no external validity.

Third, Kirchoff-Torres and Labovitz have doubts about the finding showing that small IAs do rupture. Conceivably, doctors who focus on (short-term) follow ups instead of treatments of IAs can often be left with an impression that small UIAs do not rupture, especially if patients with ruptures are treated elsewhere. The vast majority of the unruptured and ruptured IAs are small, as discussed in our article.1 Thus, the recent epidemiological research has tried to identify other risk factors for rupture than the size. The best available studies on the risk factors, that is, the unselected prospective population-based studies4,5 and the unselected Finnish lifelong series,1 are in accordance with each other and strongly question the principle of using solely the size of an UIA in rupture risk estimations. If the size is used as the only criterion, for instance, preventive treatments will have an extremely small effect on the incidence of SAH.

In brief, our study suggests that treatment decisions of UIAs should perhaps be based on the risk factor status. However, despite the high internal validity, we agree that individual treatment decisions should not be solely based on any given figure in this epidemiological article.

Disclosures

None.

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