evaluation of the 2nd largest age group is not statistically 
significant due to wide confidence interval and scatter (P>0.05). 
Despite these and other possible imperfections of the study 
we presume that it is possible to predict time delay for cer-
erebral CTA in case of SAH, based on certain clinical param-
eters, and it is obvious that not all of the influencing param-
eters are fully revealed. Further studies are required to eval-
uate the benefit of statistical models applied for scan delay 
determination in CTA.

Conclusion

Using our proposed table it is possible to estimate an opti-
mal delay time for CTA in most patients with SAH with a 
determined error.

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Invited Comments

CT-Angiography is increasingly accepted as the primary 
tool to search for intracranial aneurysms in patients with 
SAH. To ensure optimal enhancement of intracranial arter-
ies efficient bolus timing is crucial. Currently there are three 
possibilities for bolus timing: Using a fixed delay-time (e.g. 
20 sec) will usually lead to good results but in some patients 
opacification of arteries will not be optimal. The test-bolus 
method and bolus-tracking techniques both allow for ideal 
bolus timing and are therefore accepted as the preferred 
methods when optimized vessel opacification is required. For 
those who insist on using a fixed delay-time the study of 
Lukosevicius et al gives important information. The study 
shows that the ideal delay-time not only depends on the age 
of a patient with SAH but also on the clinical stage as meas-
ured by means of the Hunt-Hess classification. This finding 
may be explained by the well-known fact that the intracra-

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Lukosevicius S, et al: CT angiography in subarachnoid hemorrhage
Lukosevicius et al have made a clinically useful model by investigating the factors influencing an optimal delay time for computed tomographic angiography (CTA) after subarachnoid hemorrhage, and found that age and neurological status were significant predictive factors.

CTA has become a promising method for neurosurgical procedures. It is less invasive and provides us important information. As for the determination of scan delay, I agree with the authors that dynamic prescan is time-consuming. However, what is important is that this field of examination is not only to improve the statistical model, but also to find out the adequate timing of contrast medium for an individual patient, which requires further study.

I routinely use CTA in managing subarachnoid hemorrhage, mainly for the evaluation of the aneurysm and cerebral vasospasm. The method for determining scan delay in our system is called “SureStart” which is the automatic triggering system. When the CT value reached the threshold at the cervical carotid artery, helical scanning was started automatically,[1] which is also one of the promising methods for clinical practice.

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Reference