Aggressive antiplatelet treatment for acute branch atheromatous disease type infarcts: a 12-year prospective study

Penetrating artery infarcts that are predominantly caused by occlusion at the vessel orifices of larger caliber penetrating arteries by atheromatous plaque can represent a distinctive stroke entity as intracranial branch atheromatous disease (BAD) (1). BAD often shows progressive motor deficits leading to severe disability (2). Thrombolytic therapy by tissue plasminogen activator has not been demonstrated to be effective for BAD (3). We designed a combined use of antiplatelet agents for BAD. During 12 years, 313 consecutive patients with BAD located within the territories of lenticulostriate arteries (LSAs) and anterior pontine arteries (APAs) were prospectively collected. Treatment protocols are as follows: phase 1 (2001–2005, $n = 105$), the medical treatment that was considered best; phase 2 (2005–2009, $n = 104$), a combined treatment of argatroban, cilostazol, and edaravone; and phase 3 (2009–20012, $n = 104$), additional clopidogrel on top of the phase 2 protocol. Functional outcome was assessed by the modified Rankin scale (mRS) at one-month after stroke onset. As a result, in the total population, the phase 2 and the phase 3 showed better outcome than the phase 1 ($P = 0{\cdot}0004$ and $P < 0{\cdot}0001$). In the LSA infarct group, the phase 2 and the phase 3 showed better outcome than the phase 1 ($P = 0{\cdot}046$ and $P = 0{\cdot}0001$). The phase 3 showed better outcome than the phase 2 ($P = 0{\cdot}018$). In the APA infarct group, the phase 2 and the phase 3 showed better outcome than the phase 1 ($P = 0{\cdot}0004$ and $P = 0{\cdot}0006$) (see Fig. 1). Cilostazol appeared to be more effective for the infarcts of the APA that branch off from the basilar artery with a diameter of 200–300 micrometers, whereas clopidogrel is more effective for the infarcts of the LSA of 700–800 micrometers that turns sharply and forms a curve or a real loop. The actions of vasodilatation and endothelial protection in cilostazol and inhibition of shear-induced platelet activation in clopidogrel might work effectively (4,5).

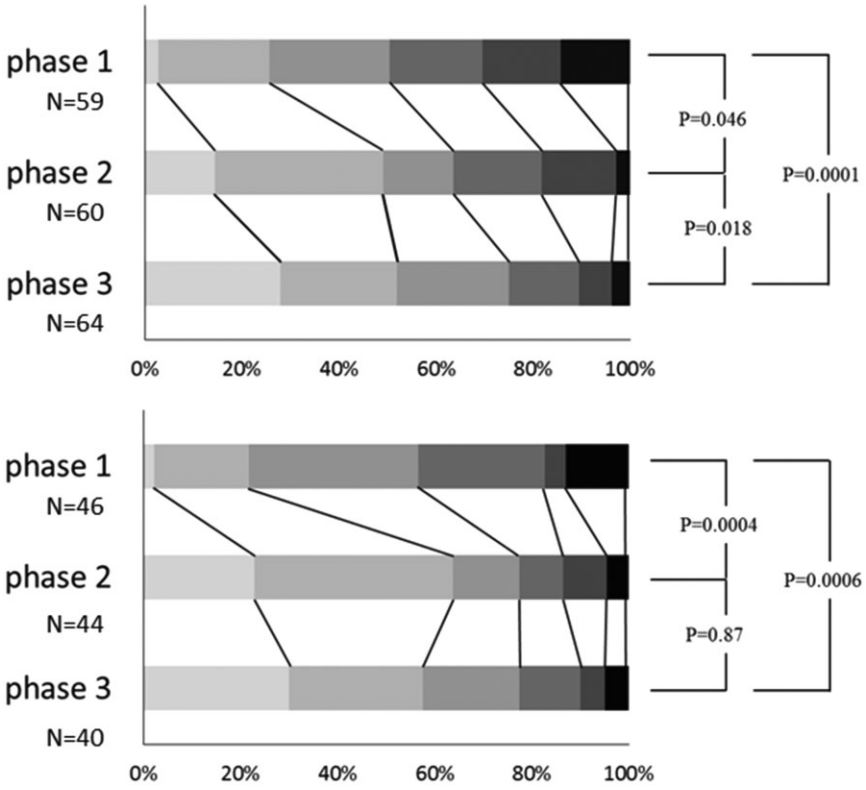

Fig. 1 Upper LSA group, lower APA group.

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