Published in final edited form as:

*Stroke*. 2009 November ; 40(11): e645–e646. doi:10.1161/STROKEAHA.109.561191.

# Platelet Dysfunction in Intraparenchymal Hemorrhage

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## To the Editor

The Cerebral Hematoma And NXY Treatment (CHANT) investigators found no association between the use of antiplatelet therapy (APT) and intraparenchymal hemorrhage (IPH) volume, growth, or outcome. In the paper and accompanying editorial, authors concluded that acute reversal of antiplatelet medications was not justified.[1,2] The literature on the topic yields conflicting results with some papers[3–6] supporting an association between APT and outcome from IPH and others not.[1,7–9] In the July issue of *Stroke*, Naidech et al[10] suggest a possible explanation for the disparate results and an alternative strategy for determining which patients with IPH might benefit from either platelet infusion therapy or other therapies designed to achieve rapid hemostatic control. In their study of 68 patients with spontaneous IPH, reduced platelet activity was associated with early IPH growth and worse functional outcome. Platelets were infused in 24% of patients and improved platelet activity but not outcome. As the authors acknowledge, the lack of benefit may relate to the delay in treatment, which averaged 21 hours after symptom onset; alternatively, it may be related to their small sample size. An intriguing aspect of this study is that reduced platelet activity was measured, not assumed on the grounds of APT use. However, the reliability and validity of assays of platelet activity and their sensitivity to the effect of aspirin, let alone to that of clopidogrel, are not fully established.[11]

Before suggesting that platelet function be assessed routinely in patients with IPH, a few important questions need to be answered. It has yet to be determined whether measured platelet activity relates to APT use, the dose of APT used, or some genetic or acquired cause of abnormal platelet function. A consensus is still lacking on the association of platelet activity and outcome after IPH,[3–9] and there is no convincing evidence that acting on reduced platelet activity can lead to improved outcomes.[6]

We commend Naidech et al for reviving this discussion. Both APT use and reduced platelet function are common in patients with IPH as is poor outcome. Given the inability of observational studies alone to resolve this issue, a rigorous evaluation of acute platelet infusion therapy in select patients with IPH seems warranted.

**Disclosures**

None.

## References


1. Sansing LH, Messe SR, Cucchiara BL, Cohen SN, Lyden PD, Kasner SE. Prior antiplatelet use does not affect hemorrhage growth or outcome after ICH. Neurology. 2009; 72: 1397–1402. [PubMed: 19129506]
2. Broderick JP. Evidence against rapid reversal of antiplatelet medications in acute intracerebral hemorrhage. Neurology. 2009; 72: 1376–1377. [PubMed: 19129503]
3. Saloheimo P, Ahonen M, Juvela S, Pyhtinen J, Savolainen ER, Hillbom M. Regular aspirin-use preceding the onset of primary intracerebral hemorrhage is an independent predictor for death. Stroke. 2006; 37: 129–133. [PubMed: 16322483]
4. Toyoda K, Okada Y, Minematsu K, Kamouchi M, Fujimoto S, Ibayashi S, Inoue T. Antiplatelet therapy contributes to acute deterioration of intracerebral hemorrhage. Neurology. 2005; 65: 1000–1004. [PubMed: 16217049]
5. Lacut K, Le Gal G, Seizeur R, Prat G, Mottier D, Oger E. Antiplatelet drug use preceding the onset of intracerebral hemorrhage is associated with increased mortality. Fundam Clin Pharmacol. 2007; 21: 327–333. [PubMed: 17521302]
6. Creutzfeldt CJ, Weinstein JR, Longstreth WT Jr, Becker KJ, McPharlin TO, Tirschwell DL. Prior antiplatelet therapy, platelet infusion therapy, and outcome after intracerebral hemorrhage. J Stroke Cerebrovasc Dis. 2009; 18: 221–228. [PubMed: 19426894]
7. Caso V, Paciaroni M, Venti M, Alberti A, Palmerini F, Milia P, Billeci AM, Silvestrelli G, Biagini S, Agnelli G. Effect of on-admission antiplatelet treatment on patients with cerebral hemorrhage. Cerebrovasc Dis. 2007; 24: 215–218. [PubMed: 17630480]
8. Foerch C, Sitzer M, Steinmetz H, Neumann-Haefelin T. Pretreatment with antiplatelet agents is not independently associated with unfavorable outcome in intracerebral hemorrhage. Stroke. 2006; 37: 2165–2167. [PubMed: 16809556]
9. Hanger HC, Fletcher VJ, Wilkinson TJ, Brown AJ, Frampton CM, Sainsbury R. Effect of aspirin and warfarin on early survival after intracerebral haemorrhage. J Neurol. 2008; 255: 347–352. [PubMed: 18297333]
10. Naidech AM, Jovanovic B, Liebling S, Garg RK, Bassin SL, Bendok BR, Bernstein RA, Alberts MJ, Batjer HH. Reduced platelet activity is associated with early clot growth and worse 3-month outcome after intracerebral hemorrhage. Stroke. 2009; 40: 2398–2401. [PubMed: 19443791]
11. Lordkipanidze M, Pharand C, Schampaert E, Turgeon J, Palisaitis DA, Diodati JG. A comparison of six major platelet function tests to determine the prevalence of aspirin resistance in patients with stable coronary artery disease. Eur Heart J. 2007; 28: 1702–1708. [PubMed: 17569678]