Hypertension and the risk of intracerebral haemorrhage: special considerations in patients with renal disease

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Intracerebral haemorrhage (ICH) comprises about 10–15% of strokes and is associated with a high mortality rate and a high level of persistent disability in survivors [1,2]. Because there is little potential to ameliorate the damage after ICH has occurred, prevention is of particular importance.

There is now quite clear evidence that hypertension is the most powerful risk factor for ICH. In a recent case-control study that involved 331 cases of primary ICH and the same number of matched controls, the adjusted odds ratio (OR) for ICH among hypertensives was 2.45 (95% confidence interval (CI) 1.61–3.73) [3]. A similar OR was obtained when patients who had ever used antihypertensive medication were considered (OR 2.44, 95% CI 1.56–3.82). Although these ORs are generally less than those reported in most previous studies of the condition [4–9] they are similar to the only other major Australian study [10]. The relatively low ORs might partly be explained by the high level of detection and management of hypertension in Australia, as well as other population differences, including the prevalence of smoking and other risk factors for ICH [11].

Ceasing antihypertensive medication use increases the risk of ICH

A major finding of the study was that the stroke risk among hypertensives varied according to their current or past use of antihypertensive medication [3]. When compared to never users of antihypertensive medications (i.e. normotensives and undetected hypertensives) the OR for current users was 1.95 (95% CI 1.20–3.16). The level of risk was significantly greater (P = 0.002) among those who had received antihypertensive medications in the past but had subsequently ceased this use (OR 4.98, 95% CI 2.25–11.02). This observation supports the notion that antihypertensive therapy reduces the risk of ICH among hypertensive patients. It is unlikely that patients ceased their antihypertensive therapy because their blood pressure had normalized; more likely the all too common problem of a failure to comply with medical advice. Although it was not possible to directly attribute this increased risk of ICH among people ceasing antihypertensive therapy to the absolute increases in levels of blood pressure (blood pressure was not measured in these people prior to their ICH), this seems a reasonable explanation. The higher risk of ICH in such patients, therefore, emphasises the importance of continuing (and indeed improving) therapy and adequate blood pressure monitoring, as well as encouraging compliance, in patients with established hypertension. Because of the prevalence and severity of hypertension among patients with renal diseases, these findings are of particular importance among this group of patients.

Implications for patients with renal disease

Although many factors probably contribute to the dramatically increased risk of ICH in chronic haemodialysis patients, there is clear evidence for a major role of hypertension [12,13]. Furthermore, the prevalence and severity of hypertension in this group of patients might also suggest that they are at increased risk of ICH [14]. Aggressive treatment of hypertension, with lower than normal target blood pressure, has been recommended for patients with renal failure, particularly those on haemodialysis [12,13].

To maximize the value of antihypertensive therapy to these patients, consideration must be given to the issues of compliance, antihypertensive efficacy, and the renoprotective value of the various therapeutic alternatives. At least in lower socio-economic groups, decreased satisfaction with patient care and with interpersonal relationships with physicians, correlate with decreased antihypertensive compliance [15]. The type of antihypertensive agent used appears to influence compliance, it being greater for angiotensin converting enzyme inhibitors and calcium antagonists than for beta-blockers and diuretics, possibly because of a reduced incidence of side-effects, particularly with combination therapies [16]. The former agents also probably have additional benefits in protecting the kidney from progressive damage [17], particularly in diabetic hypertensives [18]. Recent epidemiological evidence clearly shows that antihypertensive monotherapy has

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very limited success in reaching target blood pressures, and that combined therapies are significantly more effective [19]. Thus, combination antihypertensive therapies, based on the use of angiotensin converting enzyme inhibitors and calcium antagonists, have particular merit in patients with renal disease. There may also be a place for long, slow haemodialysis for better control of blood pressure in patients [20].

Greater risk of ICH among younger hypertensives

There is also evidence that the impact of hypertension on stroke risk is greatest among younger individuals. In our recent case-control study hypertensives less than 55 years of age were at greater risk of ICH than those above this age (OR = 7.68, 95% CI 2.65–22.5) [3]. The OR declined for each increasing age category: 2.96 (95% CI 1.39–6.30) for ages 55–64, 1.33 (0.71–2.49) for ages 65–74, and 1.94 (0.84–4.52) for those aged 75 years and over. A similar gradient has been observed in the Honolulu Heart Programme [21]. The impact of age on risk of ICH is probably exacerbated in end-stage renal failure, since haemodialysis patients suffer ICH on average 10 years earlier than the general population [12].

Conclusions

There is potential to reduce the likelihood of ICH among patients with renal disease by improving blood pressure control, and blunting the progression of renal disease. Strategies to achieve this should include consideration of the need to (i) educate both patients and physicians about the hazards of poor compliance, (ii) improve both the access to and quality of health care, particularly among lower socio-economic groups, and (iii) the increased use of angiotensin converting enzyme inhibitors, alone or in combination with calcium antagonists (increased compliance and renoprotection). In young hypertensive patients, who also have increased risk of ICH, there is considerable scope for reducing risk by enhanced detection and more aggressive treatment of hypertension.

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References

18. Bretzel RG. Can we further slow down the progression to end-stage renal disease in diabetic hypertensive patients? J Hypertens 1997; 15[Suppl 2]: S83–S88
19. Coca A. Actual blood pressure control: are we doing things right? J Hypertens 1998; 16[Suppl 1]: S45–S51