Aspirin and Catheter Size

To the Editor.—Bedford and Ashford recently demonstrated that aspirin pretreatment significantly decreased the incidence of vascular occlusion following cannulation of a radial artery with an 18-gauge catheter. Previously, Bedford had documented that a similar decrease was afforded by the substitution of a 20-gauge for an 18-gauge cannula in patients receiving aspirin. Despite the findings that the incidence of post-cannulation radial arterial occlusion can be decreased significantly by using 20-gauge cannulas instead of 18-gauge cannulas, Bedford and Ashford chose to employ the potentially more hazardous larger catheter because “it was necessary to examine the efficacy of aspirin pretreatment specifically in the situation where cannulas occupy a high proportion of the vessel lumen.”

I believe this experimental design raises important issues. The authors documented no advantage to using the 18-gauge catheter. Indeed, it would appear that it was used solely to produce a sufficiently high incidence of thrombosis to facilitate statistical comparison of the placebo and aspirin groups. Thus, it is not surprising that both studies showed equally high incidences of arterial occlusion when patients monitored with an 18-gauge cannula did not receive aspirin (table 1, Groups II and III). Were the patients (as well as the Committee for the Protection of Human Subjects in Research) informed specifically that one of the authors had already shown that 50 percent of the subjects would receive a treatment (18-gauge catheter without aspirin) that was associated with a potentially high risk of complications? Further concern arises from the observation that there is no significant difference in the incidences of arterial occlusion when the 20-gauge (no aspirin) and 18-gauge (aspirin) groups are compared (table 1, Groups I and IV).

Bedford has already demonstrated that the incidence of arterial occlusion is more than 30 percent when more than 50 percent of the vessel lumen is occupied by a 20-gauge catheter. Although these individuals comprise only a fraction of the total population, they are the ones at risk when a 20-gauge cannula is used. Obviously, they are also the individuals in whom the use of aspirin might have been expected to have produced a statistically significant beneficial effect. Because the authors obtained arteriograms prior to decannulation, these patients could have been readily identified.

In summary, I believe that a far more appropriate experimental design would have substituted a 20-gauge cannula for the one the authors used. This would have avoided the increased risk (with no possible benefit) to patients with radial arteries of large diameter. Patients with small vessels receiving the placebo would have sustained no additional increase in risk related to the study. Finally, patients with small vessels receiving aspirin might actually have benefited from the investigation.

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References


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In reply.—Dr. Cohen’s letter raises three specific issues: Were the patients informed of a high risk of complications? Is there a benefit to using 18-gauge radial-artery catheters? Is patient safety increased by using 20-gauge catheters?

Both the local committee for the protection of hu-