

evidence of this was reported by a team of California researchers headed by B. P. Citron, who had observed 14 young drug abusers suffering from "necrotizing angitis," a disease characterized by widespread small blood vessel deterioration, including rupture of the vessels supplying the brain. Although the researchers could not conclusively prove that methamphetamine was the only cause they did note that all but two of the 14 admitted to intravenous abuse of methamphetamine, that one of the 14 had used speed exclusively, and that all four of the patients who died had been heavy speed abusers. Furthermore, they pointed out that they had found no evidence of necrotizing angitis in a number of similar young drug abusers who had not taken amphetamines but had used equivalent amounts of all the other "hard" drugs reported by the 14. In late 1971 two papers by another group of California researchers led by C. L. Rumbaugh presented observations and experimental findings that have all but conclusively proved Citron's initial theory. These investigators subjected 19 multiple drug abusers ranging in age from 16 to 39 to cerebral angiography, an X-ray technique in which a dye is injected into a patient's circulatory system, allowing physicians to examine him for possible blockage of the arteries supplying his brain. Rumbaugh et al. found that 14 of their 19 patients showed moderate to severe occlusion, and the other five showed at least minimal brain damage of this sort. Although all of the patients either admitted to or were suspected of amphetamine abuse, they had abused so many other drugs that it was impossible to blame speed as the sole or primary etiological factor. Accordingly, Rumbaugh et al. administered methamphetamine by needle to five monkeys at dosages roughly equivalent to 50 to 100 mg for humans.