# Laser zaps photosensitized atherosclerotic plaque

**BOSTON**—Researchers here and in Gainesville, Fla. are applying the one-two punch of a photosensitizing agent and laser therapy to the destruction of atherosclerotic plaque in rabbits and monkeys and hope to begin clinical trials this year.

Using hematoporphyrin derivative (HPD) as the photosensitizing agent and then zapping the HPD-saturated plaque with an argon-dye laser, the investigators have been able to successfully shrink experimental plaque in animals. The process, which was introduced in 1978 at Roswell Park Memorial Institute in Buffalo, N.Y. as a new weapon in the battle against malignant tumors, may prove to be an alternative to balloon angioplasty, the researchers believe.

The intravenously injected HPD works synergistically with the laser by concentrating in the plaque and sensitizing it to the action of the fiberoptically delivered red light. Dr. J. Richard Spears, assistant professor of medicine and radiology at Harvard Medical School, first tested rabbits for treatment possibility by injecting the derivative and noting the characteristic HPD fluorescence in the plaque when it was exposed to ultraviolet light during postmortem exams. In later tests, Dr. Spears applied the argon-dye laser and achieved a resultant reduction of experimental plaque.

The most critical aspect, according to Dr. Spears, is the determination of a safe but effective amount of photoradiation that will destroy plaque without damaging the arterial wall or other tissue. If the combination of HPD and light is high enough, it could hurt any tissue, Dr. Spears says. There has to be a middle ground for "differential response between plaque and normal arterial wall," he adds.

If the procedure proves effective for high-grade plaque, which occludes more than 50% of an artery, Dr. Spears hopes the treatment will be safer than balloon angioplasty.

In Gainesville, Dr. George Abela, assistant professor of medicine at the University of Florida, has been testing photoradiation on experimental atherosclerotic plaque in monkeys. All have had partial plaque regression, he says, not only in the impact area of the dye laser but also in the surrounding area.

Peter Bates

*Dr. Spears and the argon-dye laser: Previously photosensitized plaque succumbs to the action of fiberoptically delivered red light.*

Dr. Abela also hopes to begin clinical trials this year and says, "One of the most attractive potential applications for photosensitizing materials such as HPD is treatment of low-grade lesions. Very few physicians tackle plaque causing 20% to 30% arterial occlusion with balloon angioplasty; they usually reserve it for plaque occluding 50% and above." ■