Anti-clot substance reported successful

A synthetic version of one of the body's own substances has been shown to unclog clotted coronary arteries in 35 of the first 49 patients treated in a multicenter study presented this week in Miami Beach at the annual meeting of the American Heart Association. The 71 percent success rate confirms earlier, preliminary work (SN: 3/10/84, p. 151) suggesting that tissue plasminogen activator (t-PA) constructed through recombinant DNA techniques can safely dissolve problem clots in vessels supplying the heart muscle without increasing the person's risk of uncontrollable bleeding.

The new study also confirms that t-PA, which is present naturally in the body in small quantities, works effectively when given through a vein in the arm. This, say the researchers, would eliminate the costly and time-consuming procedure of concentrating the drug directly in the clot with a catheter.

Elliott B. Grossbard of Genentech, Inc., the South San Francisco, Calif., firm producing t-PA, presented the findings from the controlled, randomized study conducted collaboratively at three medical centers: Johns Hopkins Medical Institution in Baltimore, Massachusetts General Hospital in Boston and Barnes Hospital in St. Louis.

The main technical obstacles to producing the drug have been overcome, Grossbard told SCIENCE NEWS. "I do not believe we need another technical breakthrough to make worldwide commercial-scale quantities of t-PA."

Nonetheless, Grossbard will not predict when the drug, now being tested at 25 centers in the United States and Europe, might be approved by the Food and Drug Administration for widespread use beyond the clinical trials or how much it would cost. "We are being encouraged to go relatively slowly with this," he says. The drug's optimal dosing and rate of delivery, among other issues, still need to be worked out.

Burton E. Sobel of Washington University, who led the St. Louis team study of recombinant t-PA, calls the success rate achieved by the drug "very impressive," noting that "a substantial majority of the patients showed clot dissolution within 35 to 45 minutes." Timing is crucial when a several-hour loss of nutritional blood supply to any portion of the heart muscle can lead to death of the affected tissue and possible impairment of the heart's pumping action.

Sobel also cautions that t-PA, like other clot dissolvers, should be thought of as a "time buying step" in treatment rather than as an ultimate solution to the patient's heart disease. Whatever underlying problem produced the first clot may quickly block the vessel again, he says, and even a fairly short period of blood deprivation may damage the heart muscle, leaving the patient vulnerable to further problems. Correct medical management in these patients, once the acute danger of the clot is past, still needs to be defined, Sobel said. —*D. Franklin*

Study: Surgery helps nearsighted

Does radial keratotomy, a surgical procedure in which spokelike incisions are made in the outer layer of the eye, offer nearsighted people freedom from glasses or contact lenses? Yes, according to initial results from a National Eye Institute (NEI)-sponsored study of 413 people operated on at nine medical centers across the United States. But the results so far are somewhat unpredictable, say the researchers.

The long-awaited findings, announced this week at the American Academy of Ophthalmology in Atlanta, show the best results for people with less severe nearsightedness. Included in the study were people 21 years old and up with vision correctable to 20/20 but with uncorrected vision worse than 20/40. Over half had vision worse than 20/200, meaning they could only read the big E on the eye chart.

Seventy-eight percent of the participants saw at better than 20/40 after the operation. But 30 percent still needed glasses, and 10 percent were overcorrected, making them a little farsighted. Ten percent of the eyes developed astigmatism. In half of the patients, vision continued to fluctuate during the last half of the post-operative year.

Notes George Waring III of Emory University in Atlanta, who headed the study, "The outcome cannot be precisely predicted for an individual patient." And whether the elective procedure causes corneal damage in the long term remains to be seen, but is a concern of a number of ophthalmologists. Nevertheless, Waring is optimistic. "All eyes became less myopic," he says.

The procedure, initially done in Europe, the Soviet Union and Japan, was first performed in the United States in 1978 and has enjoyed a glowing anecdotal success from among the several thousand U.S. patients who have undergone the technique (SN: 11/29/80, p. 346). With 11 million myopics in the United States who theoretically could benefit from the $1,500-and-up procedure, the NEI in Bethesda, Md., decided an evaluation was called for.

There are some side effects to the procedure — patients report glare, eyesight changes during the day and that vision takes time to stabilize. According to another study presented at the meeting, 50 percent of those participants queried report that all their expectations had been realized by the surgery, with the other half less satisfied with the results.

The problem in nearsightedness, also known as myopia, is that the cornea and lens, the two light-bending elements in the eye, are too strong: They cause light rays entering the eye to converge before they get to the retina, the light-collecting tissue lining the back of the eye.

The options for correction are to shorten the eyeball to bring the retina up to the point of focus, a not very practical idea, or to weaken the refraction of the incoming light rays, a goal accomplished with glasses or contact lenses. Similarly, radial keratotomy flattens the cornea and lessens its light-bending action.

Before the study began in 1980, an NEI review committee noted that "there should be years of research with different animal models to determine safety, efficacy and [surgical] variations that might produce better results. Here, the human is really being used as the basic research tool in looking at radial keratotomy."

— *J. Silberner*

Rx for lazy eye: Video game exercise

Children with amblyopia have one "lazy eye" that doesn't work as well as their other eye and needs to be exercised. But as with many things that are good for them, children sometimes just aren't interested in doing the exercise.

Sarah Shippman of the New York Eye and Ear Infirmary in New York City has found an "attention-holding target" — video games. She blocks the stronger eye with a patch, as in conventional treatment of amblyopia, but then has the children play an hour or more of video games every day. They start close to the screen where they can see, and then are moved back a foot at a time until they are 20 feet away.

"One problem in [conventional] amblyopia treatment is the lack of adequate stimulation of the developing visual system by objects in the environment of an appropriate size to improve vision," Shippman says. Television images are generally too large. But the depth illusion in video games, with objects getting larger and smaller, provides the weaker eye with the workout it needs.

With 19 patients 4 to 10 years of age who had not responded to wearing an eye patch, she found that 15 improved their vision after weeks to months of playing video games. Nine improved dramatically — one went from 20/80 vision to 20/30 — and six improved moderately. None, no doubt, had any objection to the prescription.

"What seems most encouraging," Shippman says, "is that the group of patients studied is precisely that group that is expected to have a good result but is resistant to [conventional] treatment."

— *J. Silberner*