

## ■ Cocaine and Cerebral Blood Loss: Video Graphically Depicts Drug's Effect

The current wave of public awareness on fitness and good health stands in stark contrast to the social and physical ills of drug abuse. The harrowing and devastating effects of illegal drug use are regularly depicted in newspaper and magazine articles and on the evening news. A spate of public service announcements along with the Government's "war on drugs" have sensitized the public to the dangers of drug use and have emphasized the need for effective tools to combat this problem.

Bob English, CNMT, Chief Technologist at Brigham and Women's Hospital in Boston, has joined the fight with a no-nonsense nine-minute video program that graphically depicts the effects of cocaine use on the brain. In the video, normal brain scans showing an intact organ with fully represented lobes (Fig. 1) are compared with scans from a cocaine user's brain (Figs. 2-3) in which there are "swiss cheese-style" holes indicating significant cerebral blood flow deficiency.

In association with and under the direction of B. Leonard Holman, MD, Chairman of Brigham and Women's Radiology Department, English has compiled a series of single-photon emission computed tomography (SPECT) images, in a rotating three-

dimensional format, depicting the brains of people with stroke or other disabilities affecting cerebral blood flow and compares them to the brains of casual and chronic cocaine users. "We looked at what may be described as occasional or social users," Dr. Holman said, "and found significant blood flow abnormality even though the CT scans were normal and there was no anatomic evidence of abnormality." One dramatic and startling account is the brain scans of a 24-yr-old male recreational user whose SPECT study showed a gaping hole in the frontal lobe where there was a perfusion deficit after only 2-4 years of using the drug.

Study results on the effect of cocaine on cerebral perfusion in dogs (*J Nucl Med* 1989;31:830) and in humans (*N Engl J Med* 1989;321:1557-1561) seem to indicate that cocaine reduces cerebral perfusion by vasoconstriction. Dr. Holman concedes this view. "It is very likely that [this] is occurring in the brain. There is vasospasm shutting down the vessels in the brain and leading to the blood flow abnormality." Holman also noted that hematomas, infarctions, and other complications resulting from cocaine use have been seen in a smaller patient population.

According to English, "SPECT [has] substantiated that cocaine is far more physiologically irritating than one

would expect. Dr. Holman and I felt that this was a real strong message. We thought we were in a position to practice some preventive nuclear medicine."

As English sees it, the danger of cerebral blood loss resulting from cocaine use is personality changes. "It intensifies personality traits. My concern is, are we creating chronic personality changes and chronic loss of memory? These are questions someone has to answer if we keep on the path of five million regular users of cocaine. In addition, are we seeing these results in coke-addicted babies?"

The program has been seen by elementary, junior high and high school, and college students. Alarm best typifies the response from college and adult audiences. "We have a lot of requests for brain scans when we leave," English says, "because there are a lot of people in an adult audience who have used cocaine." English noted that the elementary and junior high students are the most receptive. "It seems to leave an impact and they retain it."

In the presentation, which English and the technical staff conduct in their spare time, English and colleagues emphasized the fact that they are part of a medical research team. "We don't preach," English said. "We are saying that this is a self-induced disease that is totally preventable. Our goal is to change the myth that doing a line of coke is no different than drinking a

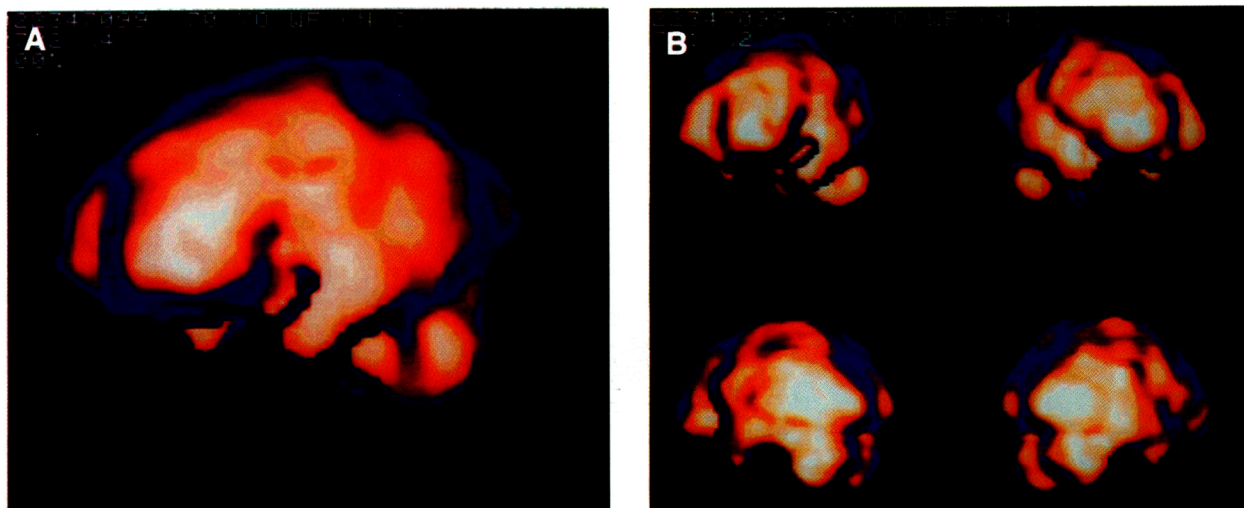


FIG. 1. (A) RAO projection of a normal 70-yr-old female. (B) Four oblique projections of a normal 30-yr-old female.

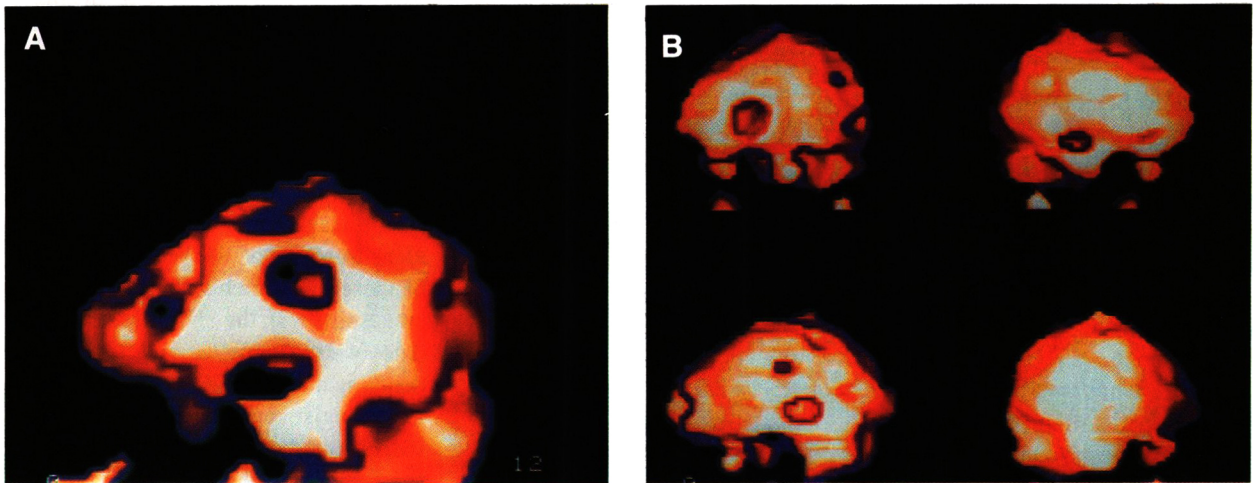


FIG. 2. RAO projection (A) and four oblique projections of a 29-yr-old male with a 10-yr history of i.v. cocaine use (negative CT scans).

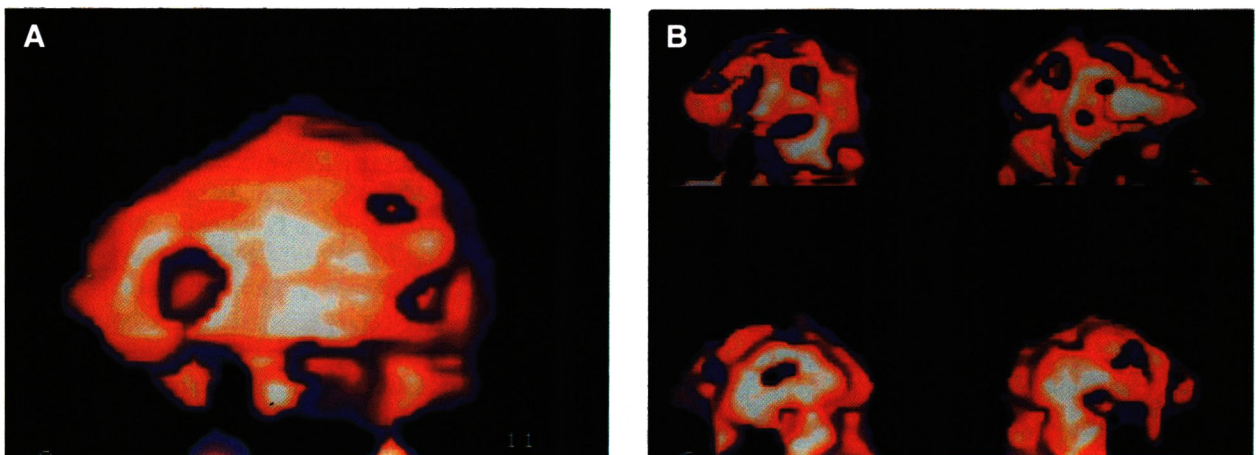


FIG. 3. RAO projection (A) and four oblique projections (B) of a 21-yr-old female with a 1-yr history of "casual" cocaine use (negative CT scans). (Figures 1-3 courtesy of Bob English, CNMT, Brigham and Women's Hospital, Boston, MA).

shot of bourbon or beer."

"The [students] are amazed, particularly when they see the 3-D rotational images," said Art Hall, CNMT, Tech Section President. "The video is a fantastic means of presenting important information and has excellent potential as a drug awareness tape. I think that it is as effective as the public service ads shown on television."

Further study of the SPECT data on the effect of cocaine and cerebral perfusion deficit may provide possible answers to the questions posed earlier by English as well as determine whether the blood loss is irreversible and whether the drug's effects are permanent even after abstinence.

In an article published in the *Baltimore Sun*, Gwinn Owens wrote: "The spreading effect of illegal drugs on the social order in America, especially in

its large cities, is clearly so staggering, so pervasive and so destructive as to be the principle domestic menace to the survival of a civilized society." As medical research provides answers on the physiologic effects of these substances, tools to combat this dilemma well be developed. "People are always saying they wish they could do something," English said, "and through no fault of their own, don't have the tools or resources. I had this tool dropped in my lap. It would be unethical not to do something with it."

**Eleanore Tapscott**  
*Managing Editor, JNMT*

### ■ 1989 Media Stars Contest

Nzulcqlwepaer Mrepduixcroinke!  
Most people would not have the

faintest idea what the preceding phrase means unless they are told the meaning is embedded. Remove a few extraneous letters and the message is clear:

N u c l e a r M e d i c i n e !

In a similar, but more conventional way, Nuclear Medicine Week (NMW) and GE Medical Systems' Media Stars Contest (July 30-August 5, 1989), attempt to educate the public and other medical professionals about nuclear medicine. Both events run concurrently and are designed to build awareness, understanding, and appreciation of the discipline through a variety of media. This insight translates tangible benefits for nuclear medicine, including increased referrals from area physicians, higher recruitment of qualified graduates into

nuclear medicine technology programs, and greater community support.

The Media Stars Contest, now in its fifth year, encourages nuclear medicine professionals to educate key audiences about the activities in their departments. The winners are selected based on their NMW promotional efforts, with special attention paid to campaigns directed at education and recruitment.

Innovation and creativity continue to be reflected in the programs and events coordinated by this year's group of contest applicants. Approximately 30 nuclear medicine professionals, ranging from technologists to the chief of a nuclear medicine department, demonstrated their dedication to increasing the awareness and the appreciation of nuclear medicine during NMW.

The winners and their institutions will be recognized for their accomplishments at the Annual Meeting of The Society of Nuclear Medicine in Washington, DC, June 19-22. Allen Smith, Manager of Nuclear Sales and Planning at GE Medical Systems, will present the awards, a \$1,000 donation to the institution and a \$250 honorarium to the individual, during the Technologist Section business meeting on June 21.

The Media Stars Contest winners are Louis N. Morgan, Prince George's Hospital, Cheverly, MD; Toya Powell, Eastwood Medical Center, Memphis TN; and Judy Williams and Marsh Eklem, VA Medical Center, Portland, OR.

Louis Morgan obtained a "Nuclear Medicine Week" proclamation from the Prince George County Council to launch the week's activities. Morgan used posters and pictorial and vendor displays to spread the nuclear medicine message throughout his department and the hospital.

All hospital personnel were invited to in-services provided by the nuclear medicine department and an open house also was held. Morgan and his colleagues coordinated "Student Technologist Day," in which technologists-in-training and staff

### 1989 Media Stars Contest Winners

#### Eastern Region

**Louis N. Morgan**  
Administrative Director  
Prince George's Hospital Center  
Cheverly, MD.

#### Midwestern Region

**Toya Powell**  
Eastwood Medical Center  
Memphis, TN.

#### Western Region

**Judy Williams and  
Marsh Eklem**  
VA Medical Center, Portland, OR.

technologists brought a high school or college students to the hospital to view nuclear medicine procedures and discuss the hospital's nuclear medicine program located at Prince George Community Hospital.

Toya Powell laid extensive groundwork for her NMW activities, kicking off her project in April, a full three months before NMW. She began by giving a nuclear medicine in-service to physician's office managers at the Eastwood Medical Center Management Group Meeting.

At the same time, Powell researched and assembled a definitive newsletter for the Tennessee Society of Nuclear Medicine Technologists, a project on which she eventually spent four months.

Throughout the months leading up to NMW, Powell disseminated volumes of information to nuclear medicine technologists, other health professionals, and the public at national meetings, departments in her hospital, and civic groups, such as the Girls Club. On August 1, Powell spoke at a city council meeting about The Society of Nuclear Medicine. The meeting was transmitted by radio broadcast across a three-state area.

Judy Williams and Marsh Eklem coordinated an educational open house, in which invitations were extended to the entire staff of the VA Medical Center. A large posterboard,

was prominently displayed in the center's lobby. Brochures also were widely distributed during NMW, with representatives of the nuclear medicine department on hand to answer questions or explain the department's activities.

Applicants were not at a loss for ideas to promote NMW 1989. Some of these ideas included: t-shirts and sweatshirts with the SNM logo and the date of NMW 1990, and similarly drinking mugs, and pens and pencils; technologist recruitment and NMW videotapes for internal and external use; nationally televised public service announcements; and proclamations by local government leaders.

Among the other entrants this year was Theodore Stent, MD, Chief of Nuclear Medicine at Harlem Hospital Center, NY, NY. Dr. Stent was able to secure NMW proclamations from the Mayor's office and from the offices of the Borough President and Executive Director of the center. Dr. Stent also held open houses for the hospital staff and community groups. According to Dr. Stent, "the education of our community on the uses of any medical discipline is imperative so modern technological advances are understood by those who would benefit most by their use."

Contest registrant Susanne Melvin, CNMT, at Eastern Maine Medical Center's (EMMC) nuclear cardiology department, in Bangor, ME, and editor of the *New England Journal of Nuclear Medicine Technology*, took her nuclear medicine message to a local radio station. She arranged for an EMMC radiologist to give 15-minute informative talks throughout NMW. The program reached a potential 125,000 listeners a day in a three-community area!

To reinforce the activities of the nuclear medicine department among physicians at William Beaumont Hospital, Troy, MI, Evelyn Shane, CNMT coordinated a hospital-wide media blitz. She placed an announcement in the hospital newsletter, which included a multiple-choice test on different nuclear medicine issues. Pam-

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