

Lithotripsy new wave in medicine

By RUTH FOLLMER
Collegian Science Writer

Two new techniques, ultrasonic and extracorporeal shock-wave lithotripsy, provide better, safer, and less painful ways to treat patients with kidney stones.

Thomas Rohrer, professor of surgery and chief of urology at the University's Hershey Medical Center, explained the latest techniques used to treat kidney stones at a seminar Wednesday sponsored by the bioengineering department.

During ultrasonic lithotripsy, a probe is inserted through the urethra and placed against the stone.

"High power is then needed to transfer vibrational energy through the probe to the stone to break it up

into pieces (of a size) that could be removed with forceps," Rohrer said, adding that the pieces are then small enough to pass through the urinary tract without much difficulty.

As with any medical procedure, however, complications might occur. The most common complications are bleeding, which often requires that patients receive transfusions, and the development of a fever, which indicates the patient has an infection, Rohrer said.

Extracorporeal shock-wave lithotripsy differs from ultrasonic lithotripsy because no probe is inserted into the patient's body, Rohrer said. Instead, the patient is lowered into a warm-water bath and a computerized X-ray machine locates the stone.

Shock waves are then generated

"like a spark plug," said Rohrer, and aimed at a reflector, which directs the waves toward the location of the stones.

"The number of shock waves generated per minute corresponds to the patient's pulse," Rohrer said. "Usually 1,500-2,000 shocks are required to break up the stones," he said.

John Vastyn, Hershey spokesman, said 184 extracorporeal shock-wave lithotripsy procedures have been done since the procedure was first used at the medical center.

Ultrasonic lithotripsy is not used much anymore because ESWL allows shorter hospital stay for patients, Rohrer said.

During ESWL patients must receive anesthesia when the shock

waves are generated, because the procedure would be very painful if the patient were fully awake.

"It would be like Shane Conlan hitting you 2,000 times to break up the stones," Rohrer said. Conlan is a Penn State linebacker.

The success of ESWL depends on the size and number of stones. "The surface area of the stone is relevant to the number of shocks needed to break it up," Rohrer said. "Multiple stones lower the chance of a patient being stone free after treatment."

The procedure is much safer than surgical treatment, Rohrer said.

According to an article published in the *Morbidity and Mortality Weekly Report*, "two deaths occurred out of the 10,000 patients treated, and two patients lost kidneys."

Chernobyl repeat not possible in U.S.

By HEATHER WILSON
Collegian Science Writer

The accident that occurred at the Chernobyl Unit Four Reactor in the Soviet Union last April could not happen at nuclear reactors in the United States, said Lawrence Hochreiter, a consulting engineer for Westinghouse Electric Corp.

Hochreiter said he bases that opinion on information he received from a task force that was in direct contact with the Soviets during a Vienna conference held after the accident. He said Westinghouse "has several individuals with first-hand knowledge of Soviet design and operational philosophy."

Hochreiter, who spoke on campus last month, said that during the Vienna conference, the Soviets hoped to convince the world's experts that they

had adequately analyzed the accident and that their proposed changes would improve the plant's design.

However, Hochreiter said the proposed changes are like "putting a Band-Aid on cancer."

Earlier last month, Energy Secretary James Herrington told the Senate Subcommittee on Energy and Nuclear Proliferation, that the Soviet Union might have restarted the Chernobyl plant without completing their promised changes.

According to an article in *The Philadelphia Inquirer*, Herrington said he had "no way of knowing" whether the Soviets had made the improvements or had restarted the plant too soon to have completed them.

Gordon Robinson, a University Associate Professor of Nuclear Engineering, agreed: "They

really wouldn't have had the time to make the changes they had promised."

Westinghouse has evaluated the probable causes of the accident, Hochreiter said, adding that the company has investigated the implications of the extreme differences in design and function between the Soviet and American plants.

An important difference between the Soviet and American plants, said Jerry Gromley (senior nuclear engineering), is that, unlike the American plants that have a negative temperature coefficient, the Soviet-designed plants have a positive temperature coefficient.

Gromley explained that under normal operating conditions, a change in power in American plants causes the plant to lose heat. A Soviet plant in the same situation, however, begins to generate enormous amounts of heat thus increasing its power.

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