Washing Out Clogged Lungs

New Technique Helps Children Breathe

By David Williamson

Physicians at the medical center have developed a new technique for washing out the clogged lungs of children with severe respiratory diseases.

The treatment has already resulted in vastly improved breathing for two youngsters suffering from a rare condition known as alveolar proteinosis, and the researchers believe it may offer new hope for others with cystic fibrosis, the most common lethal disease seen by pediatricians.

Dr. Alexander Spock, professor of pediatrics and director of Duke's Cystic Fibrosis Center, described the procedure to colleagues at a meeting of the Southern Society for Pediatric Research in New Orleans.

Breathe More Normally

Spock said the treatment flushes mucous plugs from tiny passageways and air sacs in the lungs with salt solutions so that the children can breathe more normally until the plugs form again weeks or months later.

Diseases like cystic fibrosis and alveolar proteinosis can lead to chronic infections and permanent lung damage, sometimes bringing on early death, he said.

Using the new treatment, physicians place a plastic tube in the child's trachea (windpipe) while he or she lies on one side under anesthesia, Spock explained. The same tube fills one lung with the salt (saline) solution, drains it and then resupplies the organ with pure oxygen, all within 60 seconds.

Physicians monitor the amount of saline introduced into the lung and also the amount that returns, he said. The entire process is repeated until the discharge is clear.

"After one lung has been treated, the patient is ventilated with oxygen for about an hour and then the other lung is washed," Spock said. "Gravity keeps the liquid from entering the lung not being washed."

The first patient was an eight-year-old girl from Alabama who has now had the treatment four times, he said. Most recent results from pulmonary function tests show her lungs are working normally.

The second patient, a nine-month-old infant flown here from Oregon, weighed only 10 pounds when she was first seen last autumn. Spock said since then her weight has increased, and her general condition has improved.

The pediatrician pointed out that a similar technique has been used in adults in this country for about 10 years, but because the tubes could not be made small enough for tiny lungs, it could not be performed on children younger than 14 years.

"You can make tubes smaller in diameter than the half inch now used, but then you can't get the mucous plugs out, and resistance to the flow of air is so great that you wouldn't be able to get proper ventilation," he explained.

In the adult treatment, tubes go to both lungs so that one can be ventilated while the other is being cleaned.

Spock said that he and his associates, Dr. Johannes Kylstra, professor of medicine and Dr. Charles Lanning, assistant professor of anesthesiology, found the simultaneous washing and ventilating was not necessary.

Patients Don't Drown

"Many people have believed that you can't put fluid in the lungs because you will drown the patient," he said. "We have demonstrated that under carefully controlled conditions, that isn't true.

"All infants reported to have been born with alveolar proteinosis have died, usually within a year after birth," he said. "We know this technique can prevent these early deaths."

The physician said that roughly a third of the adults who develop the condition eventually lost symptoms of it with treatment, and the goal is to get the children to the age where they may have a chance to recover as well.

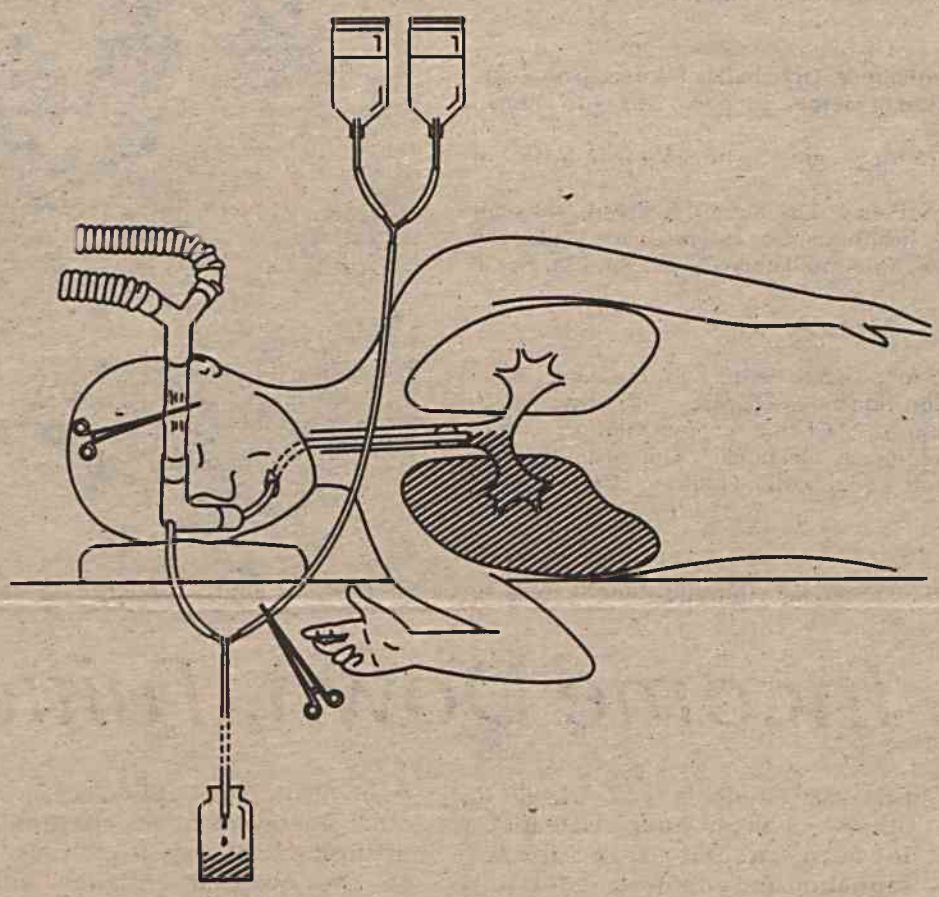
Reversing Downhill Course

"We also believe that by doing this treatment early and often enough in cystic fibrosis cases, it may be possible to reverse the progressive downhill course many patients face," Spock said. "We don't have enough information on this yet, but we are currently evaluating patients to get more data."

He said cystic fibrosis, which ranks behind cancer as a disease killer of children, is a hereditary disorder striking about one in every 1,600 individuals. In the general population, one person of every 20 is a carrier of the disease, and when carrier couples have children, statistically one in every four off-spring will have cystic fibrosis.

Scientists don't know yet why the disease causes the production of too much mucus, nor how to cure the condition, Spock said. If they can develop a test to determine who carries the trait, perhaps one day genetic counseling will help to eradicate it.

In the meantime, researchers at Duke and elsewhere are analyzing proteins in the mucus to learn their composition and origin, he added.



CLEARING THE LUNGS OF CHILDREN—This drawing illustrates the critical no oxygen interval in a new technique scientists at the medical center have devised to wash out the clogged lungs of children with severe respiratory disorders. A single tube fills the lower lung with a salt solution, drains it using the same principle that allows gasoline to be siphoned from an automobile and then resupplies the organ with oxygen, all within 60 seconds. The process is repeated until each lung is clear of mucous plugs.

Disease Film

"Thirty Minutes on Infectious Disease," a film produced by Bristol Laboratories, will be shown by Audiovisual Education at 2 p.m. March 2 and 4.

Specialists on several aspects of the problem are featured:

* Dr. Philip B. Mead, associate professor of obstetrics and gynecology at the University of Vermont College of Medicine, on "ABC: Anaerobic Bedside Culture."

* Dr. Donald Armstrong, professor of medicine at Cornell University Medical College and chief of the Infectious Disease Service and director of the Microbiology Laboratory at Memorial Sloan-Kettering Cancer Center, on "Chemotherapy: Killer or Cure?"

* Dr. Lowell S. Young, associate professor of medicine at the University of California at Los Angeles School of Medicine, on "Transmission of Pseudomonal Infections."

* Dr. George A. Pankey, head of the Section of Infectious Diseases at Ochsner Medical Center and clinical professor of medicine at Tulane University School of Medicine, on "Cutaneous Signs of Systemic Disease."

The film will be shown in Room M-406 on Wednesday, March 2, and in Rooms M-406 and 2031 on Friday, March 4.

What Do You Think?

(Continued from page 1)

(Wed.-Thurs., 2:30 p.m.) will be held in the laundry building, and employees there have these two options.

Peck said that as much as possible the sessions set up for Friday and Saturday, March 11-12, would be used as make-up times for those unable to participate at the times they were originally scheduled.

"But those who have to miss their scheduled time shouldn't wait until Friday or Saturday," he explained. "They should check with their supervisors right away about an alternate time."

And he added that to insure that everyone has a chance to participate, "We'll add some sessions on Friday, if need be."

Meeting rooms in the hospital are the Hospital Amphitheater (yellow zone, first floor), Room 3031, (purple zone, third floor) and Room M224, Davison Building (green zone, second floor).

Employee Survey Schedule

	Sat. 3/5	Sun. 3/6	Mon. 3/7	Tues. 3/8	Wed. 3/9	Thurs. 3/10	Fri. 3/11	Sat. 3/12
7:30 a.m.		Amph.		Amph.		Amph.		M224
9:00			MSI	MSI	MSI	MSI		
9:15					M224			
9:30			Amph.	Amph.		Amph.		M224
10:00	Amph.	Amph.					3031	
10:45					M224			
11:00			Amph.	Amph.		Amph.		
1 p.m.								M224
1:30			Amph.				3031	
1:45					M224			
2:00	Amph.	Amph		Amph.		Amph.		
2:30					Laundry	Laundry		
3:30			Amph.	Amph.	M224	Amph.	3031	
4:00	Amph.							
5:00			Amph.	Amph.		Amph.		
6:00		Amph.						
7:00			Amph.	Amph.	3031	Amph.	3031	
8:30				Amph.	3031	Amph.		
10:00			Amph.	Amph.	3031	Amph.		

(clip and save)