

Study supports easing circumcision pain

Concern over possible side-effects has prevented physicians from reaching a consensus on the use of local anesthesia during circumcision, despite several studies showing that infants are in pain during the short procedure. In the most recent of these studies, Minnesota researchers concluded last week that local anesthesia should be used for circumcisions and that physicians can quickly learn the proper way to administer the drug involved. In addition to the standard observations of infant behavior, the study includes the more objective measurement of blood levels of pain-related hormones. The study is unlikely, however, to singlehandedly resolve questions about circumcision, which is performed more than 1 million times each year in the United States.

In a controlled, double-blind study, researchers at Group Health Inc. and the University of Minnesota in Minneapolis divided 60 newborns into three groups: Twenty received injections of lidocaine hydrochloride at the base of their penises before surgery, 20 received saline injections and 20 received no injections. The scientists then measured the percent of time the infants spent crying before, during and after surgery, as well as the blood levels of the stress-induced hormone cortisol.

They conclude in the March 11 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* that the so-called dorsal penile nerve block significantly reduced crying and cortisol levels without short-term side-effects. The penile block, although first introduced for circumcision in 1978, has not been embraced by physicians worried about adding yet another medical step to circumcision, where pain is short-lived. Included in the possible dangers of improper administration are tissue damage from reactions to the injection and life-threatening cardiovascular effects. But, says Group Health's Leonard Snellman, the latest study indicates "it's pretty clear that [the block] works, and that it's not dangerous." He said in an interview that, since completion of the reported study, physicians have performed several hundred similar procedures without problems. The authors assert that "if circumcisions are to be performed, they should be done as humanely as possible."

But other physicians are divided on whether anesthesia's benefits outweigh its threat as another source of complications. An anesthesia supporter, Frederic A. Berry of the University of Virginia in Charlottesville, told *SCIENCE NEWS* that "it's not only a practical issue, but a philosophical one of minimizing the newborn's pain." He says new monitoring equipment eliminates the possibility that an anesthetic will dangerously affect the cardiovascular system.

According to Gerald Merenstein of the University of Colorado in Denver, pain during circumcision done by an experienced practitioner should last only a few minutes. However, he says he is "neutral" about the anesthesia issue: "There's no medication that's without risk, but if the circumcision is being done, there's no question the infant is feeling pain." Drug injections do carry the risk of tissue injury, says Merenstein, but he also notes that the longer 10- to 15-minute circumcision by an inexperienced doctor means prolonged pain for the infant.

The more basic issue, says Merenstein,

is whether circumcision should be done for other than religious reasons. In 1971, the American Academy of Pediatrics (AAP) of Elk Grove Village, Ill., concluded that there is no medical indication for routine circumcision. Although an initial decline in circumcision followed, the percentage of U.S. male newborns circumcised has stabilized at about 60 percent. Yet there may be a reversal of official AAP opinion. Because of recent studies showing that circumcised males are at lower risk of becoming infected with sexually transmitted diseases than uncircumcised males, an AAP review board is reevaluating its position. Board members held their first in a series of meetings this week. — D.D. Edwards

New model for AIDS in Third World

African countries, with some of the highest birth rates in the world, may find their populations actually shrinking in coming decades, according to a new, computerized model of population dynamics. But scientists warn that the news is not good, as the decline will be due not to well-thought-out policies but to the AIDS epidemic, which is expected to overburden many of these countries' resources in the coming years.

While most experts agree that the AIDS-related social and economic toll in Africa will be great, not all agree that the new model is accurate. Critics say that despite higher death rates in developing countries, population growth will not be so severely affected. The debate highlights difficulties in designing mathematical models to predict the course of the AIDS epidemic, and comes at a time when developing nations need accurate guidance as they consider different strategies for stemming the spread of the fatal disease.

The new model attempts to balance many factors affecting AIDS in developing countries, some of which have a much higher prevalence of the disease than does the United States. Designed by epidemiologists at London (England) University and Princeton (N.J.) University and described in the March 17 *NATURE*, the model makes the alarming prediction that "AIDS is capable of changing population growth rates from positive to negative values over time scales of a few decades."

On a more positive note, it predicts little change in developing countries' "dependency ratios," defined as the proportion of a population aged less than 15 and more than 65 years old. The ratio measures the segment of society that depends upon others for support, and can serve as a predictor of socioeconomic stress on a society. Other researchers have stated that the dependency ratio might rise with the

spread of AIDS. But the new model concludes that fatalities among non-elderly adults will be approximately equalled by the drop in the birth rate and by AIDS-related newborn deaths.

May and his colleagues inserted a range of "plausible values" for such uncertain parameters as mother-to-newborn AIDS transmission rates, average numbers of sexual partners and subsequent chances of infection, and the death rate of those infected. They found that for essentially all conditions the rate of spread of infection exceeded the rate of population growth, with varying amounts of time required for population growth to decline and drop below zero.

John Bongaarts, an AIDS demographer with the Population Council in New York City, told *SCIENCE NEWS* that May's model "gets off track" because of its failure to statistically separate different population groups with different risks of infection. Bongaarts' own model, which he is designing for the Agency for International Development and which attempts to take such variables into account, predicts only a 1 or 2 percent decline in growth rates for developing countries. With current rates of 4 percent or higher, such a drop would still leave the countries with high growth rates.

"Of course," he adds, "even if you get only a 1 percent decline in the growth rate, that means a doubling of the death rate, so you have a lot more dead people and you get an enormous impact on the health care system." Computer models, he says, may help lessen that impact. "There are several ways that you can try to stop the epidemic. But before you start spending a lot of money, you can try it out on the computer."

"These mathematical models are essentially tools for thinking clearly," May agrees, cautioning that his model is still preliminary. — R. Weiss