30 Years of Pediatric HIV/AIDS Treatment: A Time of Breakthroughs, Innovation

A note from the editors:
To commemorate the 40th anniversary of Pediatric Annals, the publishing staff invited the Editorial Advisory Board and some experts to discuss important advances in the field of pediatrics over the past 40 years. Excerpts from this discussion, held in March 2011, will be published in the next several issues of Pediatric Annals.

Stanford T. Shulman, MD, moderator: We now will discuss the human immunodeficiency virus and AIDS. Ram Yogev, MD, is an international leader in HIV, specifically pediatric HIV.

Ram Yogev, MD: This disease was first noticed in 1981 in the United States, which is only 30 years ago. Interestingly, there is evidence that the disease originated in Africa. There is also a possibility that it had been identified in the United States back in the 1960s, although we didn’t know too much about it at that time. It first appeared in homosexual men and then in IV drug users, and unfortunately, that brought a lot of stigma to it. Many physicians were even reluctant to take care of these patients, and they even suggested that they should not be allowed in the hospital.

The real breakthrough in this disease in pediatrics was about 5 or 6 years after it was discovered. The first treatment was approved, which was azidothymidine (AZT). This drug was originally investigated for the treatment of cancer. However, it was not effective for cancer, and it was put on the shelf. Luckily enough, someone remembered it, and began suggesting its use. That really led to major changes to our approach to treatment.

One of the biggest successes of all the funding in research is the study, conducted by the Pediatric AIDS Clinical Trials Group (PACTG), sponsored by the NIAID/NIH, at several study sites, which showed that AZT reduces the risk of HIV transmission from infected mother to the children.1 The study showed that treatment with AZT alone can reduce mother-to-child transmission of the disease by two-thirds.

Recently, a few states (eg, New York, Connecticut, Illinois) made it mandatory to test if the newborn is infected, and they reported close to 100% lack of transmission from mother to child.

The next breakthrough was in the 1990s, when more drugs came to the market. These drugs attack the virus when it enters the cell, or the way it comes out of the nucleus and when it replicates itself. The first protease inhibitor was a major breakthrough. The availability of the family of protease inhibitors led to three different drugs from at least two different families, called HAART (Highly Active Antiretroviral Therapy). HAART made the difference between an acute disease, which in children had a 60% mortality rate by 6 years of age, to a life expectancy of 40 or 50 years. Obviously, there are side effects of these drugs. We have problems with patient adherence, but the future for those patients looks very bright compared with what it was 20 years ago.

Dr. Shulman: Dr. Yogev wrote an editorial, which starts out by saying that when he started his career in treating patients with HIV, he attended their funerals.2 Now, he’s able to attend their grade school, high school, and college graduations. I think that encapsulates the incredible progress made in the treatment of pediatric HIV infection.

Dr. Yogev: That editorial was written because there were small studies suggesting that at least in pediatrics, if we start treatment in the first 3 months of life, we’re changing the course of the disease so much that the patients are losing their antibodies.3,4 A study published about 2 years ago showed that within 1 year you can see the difference in the outcomes of patients who started treatment before 3 to 4 months of age and those who started it later.5

Sharon B. Murphy, MD: I’m prompted to reflect that, coincident with your recollections of the epi-
emic of pediatric AIDS, those of us in pediatric oncology, like our colleagues in adult oncology, began to see an epidemic of pediatric AIDS-related malignancies. The striking thing was that this came up among hemophiliacs and children who had vertical-transmission or blood-transfusion-transmitted disease from neonatal transfusions. So we began to see quite a number of cases early in the epidemic. However, as they were recognized, there was the development of AZT for mothers and their infants. Through the introduction of HAART, we stopped seeing the epidemic of AIDS-related malignancies. The striking thing was that this came up among hemophiliacs and children who had vertical-transmission of human immunodeficiency virus type 1.

So we began to see quite a number of cases early in the epidemic. However, as they were recognized, there was the development of AZT for mothers and their infants. Through the introduction of HAART, we stopped seeing the epidemic of AIDS-related malignancies. At Children’s Memorial in Chicago, we had cases of AIDS-related malignancies in children who were immunosuppressed, such as smooth muscle tumors and leiomyosarcomas. Those cases have gone into the historical dust bin, thank goodness.

I have one question, though. Now that all these children are living longer and progressing through adolescence to adulthood, what kind of chronic care models have you worked out to transition their continuing care?

Dr. Yogev: This has been one of the major issues in the state of Illinois and I’m sure in other places as well. In most states, Medicare and Medicaid stop covering these patients when they turn 19, unless they have a disability. Most of our patients don’t have a disability. So we run into a problem when we want to transfer them to adult treatment.

Our institution has a social services staff that helps identify where the patient can go for treatment after they leave our institution. There is some continuation in treatment in that we contact the clinic, and we go to that clinic with the patient, and request people from that clinic to come to our clinic. We discuss with the new physicians if they like the patient’s treatment regimen, and if they will continue the same treatment. If not, then we make modifications together.

However, there have been about 10% to 15% of patients who do not feel comfortable with their new physician, and they return to us. We also are working to obtain private donations to help us to cover taking care of those patients who are uninsured. There are some state and federally funded programs where medication is available to the patient at no cost.

Dr. Murphy: Dr. Yogev, could you comment what the projected annual cost of care for one of these young people might be?

Dr. Yogev: There are different estimates. Unfortunately, in the United States and Europe, we are paying for the rest of the world, in part related to the cost of research and development. It depends on the set of drugs, but it can cost from $15,000 to $40,000 a year for a patient to take just the medicine.

Dr. Murphy: That’s just for the medication?

Dr. Yogev: Just for the medication. I happen to also work in Africa and Thailand and they are combining drugs that cost around $30 to $40 a month at most, so you can see it’s $300 to $400 a year versus $40,000.

Dr. Shulman: I’m sure we could keep talking about this, but I really think that this is a great overview of the HIV situation over decades. Thanks very much.

REFERENCES

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