AUA 2008: MATERNAL EXPOSURE TO PERSISTENT ORGANIC POLLUTANTS LINKED TO UROLOGIC CONDITIONS IN BOYS

ORLANDO, FL, MAY 18, 2008—Higher incidences of congenital anomalies, including cryptorchidism (undescended testicles) and hypospadias, were found in boys whose mothers had higher serum levels of certain organochlorine compounds, researchers say. Two separate studies presented today during the Annual Scientific Meeting of the American Urological Association (AUA) in Orlando confirmed existing hypotheses that maternal exposure to endocrine-disrupting chemicals — including total polychlorinated biphenyls (PCBs, such as Arochlor) and organochlorinated pesticides (such as dichlorodiphenyl-trichloroethane, or DDT) may contribute to an increased incidence of these conditions.

The data was presented to the media on Sunday, May 18, 2008, during press conferences starting at 8:00 a.m.

Mothers with high levels of organochlorine compounds in their bodies are at a greater risk of bearing sons with undescended testicles (cryptorchidism). In a study (abstract #276) of 40 boys undergoing surgical treatment for the condition, researchers from New York and Michigan analyzed PCB serum levels from both the patient and the mother and compared the readings to residual PCB levels in the patients’ fatty tissue samples (taken at surgery). Patients ranged from eight to 18 months of age at the time of treatment.

Researchers’ analysis of the amount of OCC residue in the samples revealed that serum PCB levels reflect the fatty burden of OCC residues in the boys, and OCC concentration in maternal serum samples correlated with the son’s serum levels. Aggregate PCB levels and maternal levels of individual PCB congeners were significantly higher in boys with undescended testicles than in mothers of boys without the anomaly.

Researchers from Michigan and Atlanta presented similar findings (abstract #277) on congenital anomalies and chemical exposure. Using data from the Michigan Long-Term PBB Cohort, researchers examined individuals exposed to polybrominated biphenyl (PBB) during 1974-1974, including sons of mothers with known serum PBB levels, to determine whether in-utero exposure to PBB put male neonates at a greater risk for genitourinary (GU) or reproductive conditions. Self-reported data on varicocele, cryptorchidism, hypospadias and other GU and reproductive conditions was compared to estimated maternal PBB levels at the time of conception.

Of the sons whose mothers had measurable PBB levels at the time of conception, 35 reported GU conditions, including hernias (13), hydroceles (10), undescended testicles (9), hypospadias (5), phimosis (2) and varicocele (1). Sons whose mothers had PBB levels greater than 5 parts per billion were more likely to report these conditions than those whose mothers had lower levels. Maternal PBB levels were not found to have an impact on birth weight or estimated gestational age. 12.2 percent of boys with maternal serum levels greater than 5 were more likely to report GU conditions, compared to 5.5 percent of boys with lower maternal PBB levels.

“Mothers with known exposure to these enduring compounds should tell not only their own doctors but also their sons’ pediatricians,” said Anthony Y. Smith, M.D., a spokesman for the AUA. “These data underscore the importance of regular ‘well-baby checkups’ so that these easily treatable conditions are diagnosed promptly.”

About Pediatric Urological Conditions:

· Cryptorchidism: Undescended testicles occur in 3 to 4 percent of full-term infants and, if left untreated, can lead to infertility and a greater risk of developing testicular cancer. In about 65 percent of
patients, the condition spontaneously resolves by nine months of age. The condition is treated hormonally or surgically in patients whose testicles do not descend into the scrotal sac naturally.

· **Hypospadias:** One of the most common birth defects of the male genitalia, hypospadias varies in incidence around the world but can affect up to one in 125 boys. It occurs when the urethral opening is not positioned at the tip of the penis. Hypospadias can range in severity, depending on whether the urethral opening is minorly displaced on the glans penis (first degree), on the shaft of the penis (second degree) or not on the penis at all (third degree). Not all first-degree cases require treatment; surgical repair of severe hypospadias can involve multiple surgical procedures and, in some cases, mucosal grafting.

· **Hydrocele:** Approximately one in 10 male infants present with a hydrocele at birth. A fluid-filled sac surrounding a testicle, hydroceles are typically benign and painless and disappear in the first year of life. Hydroceles require treatment only when large enough to cause disfigurement or discomfort. Treatments include surgical excision and needle aspiration.

**About Organochlorine Compounds:** Initially lauded for their chemical stability, PCBs (such as Araclor and its congeners) and organochlorinated pesticides such as DDT are lipid-soluble compounds actively produced around the world in the first half of the 20th century. After widespread use in agricultural and manufacturing applications (as plastizers, heat-stabilizing additives for PVC electric insulation, adhesives and paints), they were discontinued in both open and closed uses in the 1970s when health risks became apparent. Lipid soluble, the compounds are absorbed and dispersed to living tissue and, as a result, can have a cumulative effect and cause toxin damage across generations. The United States banned their domestic production in 1977.

In addition to the author, Anthony Y. Smith, a member of the AUA Public Media Committee, will be on hand to provide expert commentary on the studies.

**NOTE TO REPORTERS:** Experts are available to discuss these studies outside normal briefing times. To arrange an interview with an expert, please contact the AUA Communications Office at the number above or e-mail Wendy Isett at wisett@auanet.org.


**About the American Urological Association:** Founded in 1902 and headquartered near Baltimore, Maryland, the American Urological Association is the pre-eminent professional organization for urologists, with more than 15,000 members throughout the world. An educational nonprofit organization, the AUA pursues its mission of fostering the highest standards of urologic care by carrying out a wide variety of programs members and their patients, including UrologyHealth.org, an award-winning online patient education resource, and the American Urological Association Foundation, Inc.

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