Unique study highlights importance of universal newborn screening for lethal genetic disorder

February 25 2013

Contrary to current belief, routine newborn screening improves the detection of the lethal form of congenital adrenal hyperplasia (CAH) in girls as well as boys, saving lives in both sexes, according to a unique study of CAH during the last 100 years published Online First in *The Lancet Diabetes and Endocrinology*. Babies are routinely screened for CAH in most developed countries, but this is not yet the case in all countries, including the UK and Australia.

"Until now it was believed that newborn boys with the severe salt-wasting form of CAH were at much greater risk of delayed diagnosis and early death than girls, as girls are more often diagnosed shortly after birth because of ambiguous genitalia, whereas boys appear normal. However, our data show that both boys and girls are missed by physical examination (even in a country such as Sweden with a developed health-care system), and that newborn screening improves survival in both sexes equally", explains Anna Nordenström from the Karolinska University Hospital Huddinge in Sweden, a senior researcher on the study.

CAH is the most common adrenal disorder in children and affects the production of cortisol in the adrenal glands. The life-threatening salt-wasting form of CAH affects one in 10 000 to 15 000 live births and is associated with overproduction of androgen hormones, which can result in girls being born with ambiguous genitalia, while boys generally appear normal. It can lead to serious illness (neurological damage or intellectual

disability) and death if not recognised and treated early enough.

In this study, Gidlöf and colleagues analysed all known cases of CAH in Sweden between 1910 and 2011, and examined the impact of medical developments over time.

The analysis showed a dramatic increase in diagnosed cases in the 1960s and 1970s, following the discovery of the first effective treatment in 1950 and increased awareness of CAH and its symptoms, and after the introduction of newborn screening in 1986. The proportion of severe cases (salt-wasting CAH) diagnosed increased significantly after the introduction of screening, and the female-to-male ratio in these patients was close to one.

Around 16% of diagnosed patients born after the start of the screening programme were not identified by screening, but most of these (38/43 cases) were late-onset non-classical cases—a milder form that can appear any time from early childhood with rapid growth or other signs of increased androgen production—that were detected at a later date.

Writing in a linked Comment, Bridget Wilcken from The Children's Hospital at Westmead and University of Sydney in Australia says, "There is little doubt that screening for the disorder fulfils the essential criteria for screening—it is, after all, a potentially lethal disorder—and a 2010 study in the UK concluded that a case can be made for screening. Certainly, paediatric endocrinologists from Australia agree."

More information: www.thelancet.com/journals/lan … (13)70001-9/abstract

Provided by Lancet