Newborn jaundice treatment may increase risk of childhood seizures

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New research suggests that phototherapy – a treatment for newborns with jaundice – could increase children's risk of developing epilepsy. The finding raises concerns about babies being given the treatment when

it's not absolutely necessary, as the potential risks could outweigh the benefits.

"Phototherapy may have delayed adverse effects that should make us more cautious about using it," said first author Thomas Newman, MD, MPH, professor emeritus of epidemiology and biostatistics and pediatrics, "and not use it in babies who don't need it."

The new research, published September 24 in *Pediatrics*, was conducted as part of the Late Impact of Getting Hyperbiliru binemia or photoTherapy (LIGHT) study, which examines associations between phototherapy and later adverse outcomes. It analyzed data from about half a million babies in the Kaiser Permanente Northern California health care system, followed for an average of 8 years. About 37,000 of the children, or 7.6 percent, had received phototherapy.

In the treated group, about 1.24 children per 1000 per year received at least one seizure diagnosis and at least one prescription for an antiepileptic drug, as compared to 0.76 per 1000 per year in the untreated group. After statistical adjustment for factors that might lead to both phototherapy and seizures, phototherapy-exposed children had a 22 percent higher risk of experiencing these outcomes in the years following treatment. As had been reported in a previous, smaller study from Denmark, the effect was seen only in boys.

"It looks like phototherapy increases the risk of seizures in boys, but we can't say whether it does so in girls," said Newman.

Higher Thresholds for Treatment

In infants, jaundice arises from build-up of bilirubin, a yellow pigment, in the bloodstream. Bilirubin is a normal byproduct of the breakdown of red blood cells, but at very high levels, the compound is toxic to brain

cells and can cause permanent damage.

Phototherapy works by lowering bilirubin levels. Babies absorb the blue light through their skin, and it changes the shape of the bilirubin molecules and renders them water-soluble and more easily excreted. For significantly jaundiced babies, phototherapy remains a viable option to get their bilirubin levels under control.

For many infants, time and adequate nutrition are enough to fix the problem. Bilirubin levels generally peak in babies about three to seven days after birth. During that time, their liver matures and becomes capable of processing the compound on its own. At the same time, the infant's mother will begin producing higher-calorie mature milk, which further helps with bilirubin excretion.

This said, physicians will sometimes administer phototherapy even if a baby's bilirubin levels are likely to fall naturally, said Newman.

"Phototherapy is sometimes done during the birth hospitalization to try to reduce the chances of having to draw more bilirubin levels and treat with phototherapy later," he said. "That would make sense if we were sure phototherapy were harmless. But data like these suggest that we should treat only babies that really need phototherapy now, not those who might need it later.

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