

Johns Hopkins doctors remove baby's brain tumor that contained teeth

March 3 2014

Doctors at Johns Hopkins Hospital have removed a rare tumor that contained several fully grown teeth from a baby boy's brain.

The [tumor](#) was found in the then-4-month-old from West Virginia in 2012 after a pediatrician noticed that his head was unusually large for his age.

Doctors wrote about the findings in an article that appeared this week in the *New England Journal of Medicine*. The discovery could someday help researchers trying to cure diseases or grow new organs, medical experts said.

"It gives us more insight into the origins of the tumor," said Dr. Edward Ahn, a pediatric neurosurgeon at Johns Hopkins who was the lead surgeon in the case.

The tumor found in the child was a craniopharyngioma, a rare mass found mostly in young children that can press up against the pituitary gland and optic nerve and cause pressure in the brain, according to the National Institutes of Health.

Only five other cases in medical literature found teeth in these types of tumors, Ahn said.

Teeth are more commonly found in another kind of tumor, teratomas. Doctors have found many bodily structures, including fingers and even

partially formed humans, in teratomas because their cells have the ability to form any kind of cell type or organ system within the tumor mass, said Dr. James T. Rutka, a pediatric neurosurgeon and chair of the University of Toronto's department of surgery who was not involved in the Maryland case.

"If they are absolutely certain this is a craniopharyngioma, it would be way less common" to have teeth or any body part, said Rutka, the editor-in-chief of the *Journal of Neurosurgery* and a past president of the American Association of Neurological Surgeons.

The baby's mother, who did not want to be identified to protect her family's privacy, said in an interview that she took her son to the pediatrician for a stuffy nose in 2012. Doctors discovered that the boy's head had grown significantly from two weeks before when it was measured during a routine visit.

An ultrasound and CT scan revealed the massive tumor, which [doctors](#) said they had to remove through surgery.

"The tumor was very large and the baby was so small," Ahn said. "To do this type of surgery on a 4-month-old baby is extremely risky, but something we had to do right away."

The baby's mother said: "It was absolutely terrifying. It is the scariest thing I have ever gone through."

Until the surgery, doctors didn't know what kind of tumor had grown on the child's brain.

Once inside the brain, Ahn discovered a solid tumor with pieces of white that he thought at first was calcium, which is not unusual in these tumors.

Craniopharyngioma tumors are formed from the lining of the brain or back of the mouth and often have calcium inside but not organized into teeth, Rutka said.

"We had to think twice," Ahn said. "We first thought they were flakes of calcium. When we looked at it closer, we were like, 'Those really look like teeth.' "

A pathologist confirmed a week later that they were teeth.

Ahn said more research is needed on craniopharyngioma tumors to determine why teeth sometimes form.

"No one knows," he said. "It must be the origin of the tumor. ... They might have had some common lineage with the cells that produce teeth."

Dr. Narlin Beaty, a neurosurgeon at the University of Maryland Medical Center who helped research and write the *New England Journal of Medicine* article, said the discovery could help build on current research and theories.

"It always has been hypothesized that this type of tumor is from cells that form teeth," Beaty said. "We see calcification and keratin and other parts of teeth, but very rarely do we see fully formed [teeth](#). Any time you see anything out of the ordinary in medicine, it is important to document it and you can learn from it."

Rutka said that perhaps scientists could do research similar to that derived from teratomas.

"Already, researchers are harnessing stem cells from teratomas for good," Rutka said. "There are stem cell lines derived from teratomas that are being grown into heart cells and muscle cells."

The baby is now 2 years old and walking. He has some vision problems and is on a hormone-replacement regimen, but has adjusted well since the surgery, his mother and Ahn said. Doctors could not remove all of the tumor because it was too close to major blood vessels. The boy comes for regular checkups at Hopkins so doctors can monitor his condition.

"The child is doing great," Ahn said. "He is making good developmental progress. So far, so good."

The mother is grateful for her son's recovery.

"We had the best group of doctors, and I am grateful that they discovered this early enough that maybe it might help other people," she said.

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Citation: Johns Hopkins doctors remove baby's brain tumor that contained teeth (2014, March 3)
retrieved 26 April 2024 from
<https://medicalxpress.com/news/2014-03-johns-hopkins-doctors-baby-brain.html>

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