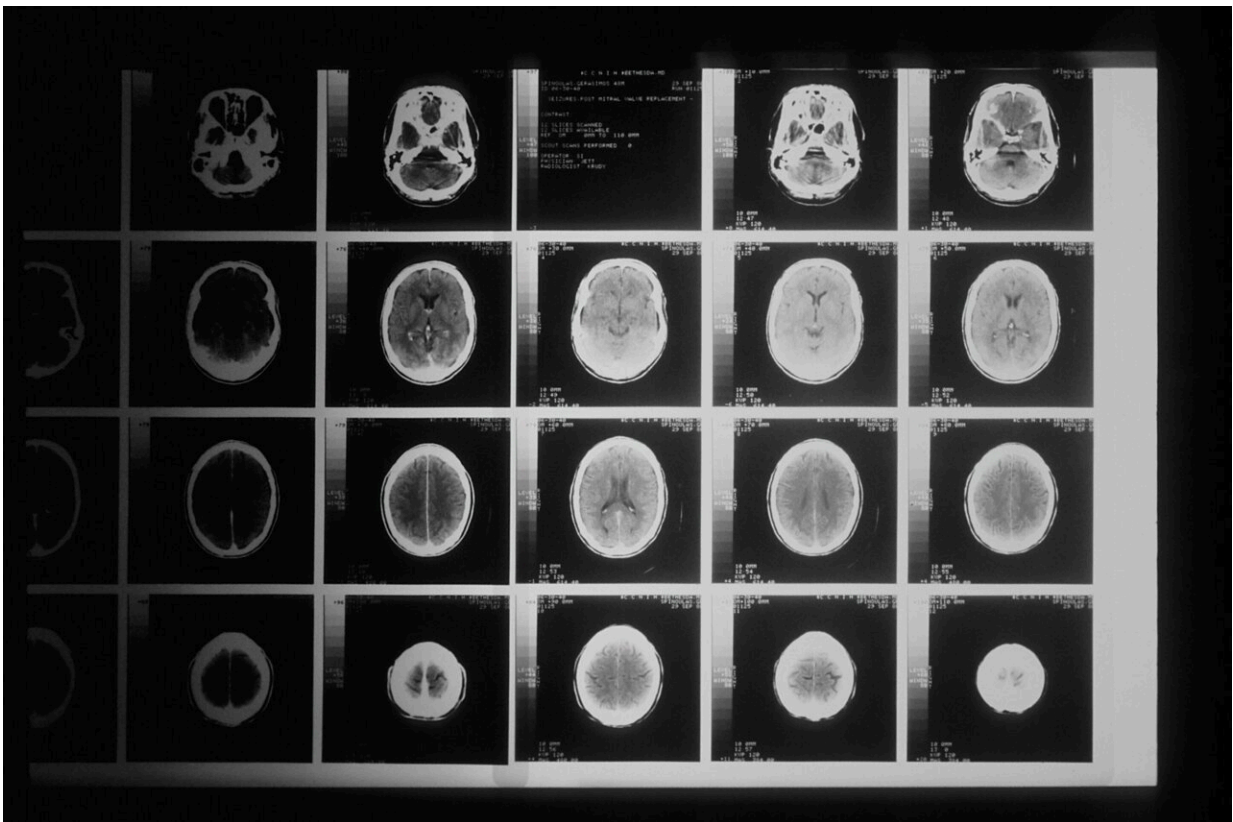


Pediatric brain cancer is rare. A doctor explains why some kids are more vulnerable than others

September 30 2022, by Wendy Ruderman



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The odds that a doctor will diagnose your child with pediatric cancer are slim, and the chances of a brain cancer diagnosis are even smaller.

Each year, roughly 4,000 kids—out of about 73 million in the United States—will be diagnosed with a [brain](#) tumor. Of those, roughly half will have one of several types of a malignant, [aggressive tumor](#). For instance, medulloblastoma is among the most common type of malignant brain tumor in children: About 500 new cases are diagnosed each year. That's 0.0007% of all children nationwide, or one in almost 150,000.

Pediatric [brain cancer](#) is so rare that doctors and researchers are still learning why it occurs. The Inquirer spoke with Garrett Brodeur, a pediatrician and director of the Cancer Predisposition Program at Children's Hospital of Philadelphia, about what causes cancers in kids, and why some may be more vulnerable. The interview has been edited for length and clarity.

Why do kids get brain cancer?

We don't know for sure. I would say we have a good suspicion that it has to do with [mistakes](#) made as cells are multiplying during development, either prenatally or postnatally. When a person is conceived, they're one cell—one fertilized egg. And when they're born, they're 10 trillion cells.

Each time one cell becomes two, it has to copy 6 billion base pairs of DNA exactly. It's a very complicated process.

Do cellular 'mistakes' always lead to cancer?

When mistakes happen, most of the time, those cells end up dying. They end up not being able to survive—either because the mistakes may cause the cells to die, or there are other protective mechanisms that recognize that something's wrong and internally activate a self-destruct mechanism, or cellular suicide.

But it doesn't always happen. A cell gets some growth advantage, and it doesn't die. And that's probably what causes most childhood cancers of the brain or elsewhere.

Are some kids more vulnerable?

We know that some patients are genetically predisposed to get their [cancer](#), because they have a mutation in a gene that puts them at increased risk. Sometimes that increased risk is very high compared to the [general population](#).

How can I know if my child has a higher risk of getting brain cancer?

There are really just two ways. One way is there's a [family history](#) of a certain cancer, or group of cancers, that tend to go together related to a syndrome. The second way is they have physical features of that syndrome. For instance, there's a syndrome where you get [thyroid cancer](#) and a lot of those patients—but not all—will have a very large head.

What can we learn after a brain cancer diagnosis?

We biopsy tumors and see what it's like under the microscope to make the diagnosis, but then we genetically analyze the tumor itself. So virtually every tumor has some, or in many cases, a lot of genetic changes. When we look at the changes in the tumor, sometimes we'll see a change in a gene that we know—if it were in all the cells of the body—it would have predisposed them to get that cancer.

What can be done if I know my child is genetically at higher risk?

The main thing we can offer right now is surveillance. So if we know what type of tumor they're likely to get, we can do tests, whether it's a [physical exam](#), blood tests, ultrasounds, MRIs, X-rays, or whatever. We can do tests to try and identify the tumor when it's small and when it's easy to remove surgically, and they usually don't need radiation. They need very little chemotherapy. It's usually not spread throughout the body and they have a very good prognosis. So if we know someone has an increased risk for a brain tumor, we can do MRIs of the brain every six months or a year.

Although it's rare, are there any warning signs of brain cancer to be aware of?

The general signs are headache, vomiting, and abnormal eye movements caused by paralysis or impairment of some of the cranial nerves that control the eye muscles.

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