Targeted radiation provides option for kids with difficult-to-treat liver cancer

8 November 2018

Targeted tumor radiation provides a feasible treatment option for children with difficult-to-treat liver cancer, according to a new study published today in the journal *Pediatric Blood and Cancer*. The treatment, known as Transarterial Radioembolization with Yttrium-90 (TARE-Y90), shows promise for patients with liver cancer that is resistant to chemotherapy and cannot be surgically removed to help improve survival time, or to shrink tumor size to allow for surgical treatment or transplant.

"When chemotherapy fails, additional treatment options for children with non-surgical liver cancers are limited and not very effective," said Allison Aguado, MD, lead author of the study and pediatric interventional radiologist at Nemours/Alfred I. duPont Hospital for Children in Wilmington, Del., one of the few locations pediatric patients can receive this care. "TARE-Y90 has the potential to offer children with the hardest to treat liver cancer a treatment that is less toxic than current options and could facilitate a cure."

The study describes a retrospective review of 10 children between the ages of 2 and 18 years old with primary liver cancer treated with TARE-Y90 between January 2011 and April 2017. All patients had previously been treated unsuccessfully with chemotherapy and had no curative surgical options but did have preserved liver function.

TARE-Y90, a treatment that is approved by the FDA for adults with liver cancer, allows much higher doses of radiation to be delivered to the tumor while sparing normal surrounding tissue by using an image-guided catheter to carry radioactive microbeads directly to the tumor sites through a tiny incision in the groin. Each patient was treated with Y90 one to two times and generally observed overnight before being discharged. Most patients reported no or mild side effects, including fatigue and fever.

As a result of the TARE-Y90 treatment, seven patients showed temporary disease control, with two additional patients demonstrating a partial response and one with a robust response that was able to be bridged to transplant.

Because of specialized training required to perform the procedure, TARE-Y90 in pediatric patients is only offered at a few hospitals, including through the Nemours Liver Tumor Program based at duPont Hospital for Children. The comprehensive internationally recognized treatment team includes Dr. Aguado, Stephen Dunn, MD, liver transplant surgeon, and Howard Katzenstein, MD, pediatric liver tumor oncologist. The study authors note that more research is needed to understand which patients would benefit the most from this treatment.

"TARE-Y90 should be considered effective and feasible for children with liver cancers and has the potential to be used earlier in treatment, alongside chemotherapy, to help reduce tumor size to provide better surgical treatment options and improved prognosis," said Aguado. "I am fortunate to be part of the Nemours Liver Tumor Treatment Team, working alongside world the renowned pediatric liver specialists, Dr. Howard Katzenstein and Dr. Stephen Dunn, to add interventional radiology to help care for children with liver tumors."

In the study, the authors note several limitations, including the retrospective nature of the research, as well as the potential for selection bias in the patients treated, as patients were only included if they had chemoresistant, nonsurgical disease, without case-control for comparison.

Provided by Nemours Children's Health System