

CONTACT: Maryann Verrillo 703-460-5572 Diane Shnitzler 703-460-5582 March 14, Don Murphy 212-453-2462 March 14, Neil Hochman 212-453-2067 March 15–March 20, 202-249-4016

3975 Fair Ridge Drive Suite 400 North Fairfax, Virginia 22033 703.691.1805 703.691.1855 fax www.SIRweb.org

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# New Localized Cancer Treatment for Advanced Retinoblastoma Saves Children From Having Eyes Removed, Restores Vision in Some Cases

## Interventional Radiologist Delivers Chemo Drug Directly to Eye via Ophthalmic Artery

Washington, D.C. (March 17, 2008)—A new interventional radiology treatment successfully treats advanced retinoblastoma—a deadly, inherited cancer of one or both eyes in children—and often spares them from having their eyes surgically removed (enucleated), according to the results of a study released today at the Society of Interventional Radiology's 33rd Annual Scientific Meeting. Advanced retinoblastoma is the most common eye cancer in children and—because there is no effective drug treatment—is usually treated by removing the eye to avoid the cancer spreading. Because an interventional radiologist delivers the drug directly to the eye via the ophthalmic artery, a much larger, curative dose of the cancer-killing drug, Melphalan, can be given than with intravenous chemotherapy. "This new interventional radiology treatment is a tremendous advance in treating retinoblastoma. It allows many children to keep their eyes and-in some cases-restores vision," said Pierre Gobin, M.D., attending radiologist, professor of radiology and neurosurgery and director of the Division of Interventional Neuroradiology at NewYork-Presbyterian Hospital/Weill Cornell Medical Center in New York City. "In this research study, we enrolled 21 patients with advanced retinoblastoma for whom conventional treatment is enucleation," he noted.

The treatment cured half the patients for whom there is enough follow-up and improved the vision in some. Whether the vision can be improved depends on the size of the tumor and whether the vision was already lost before the interventional radiology treatment. In those cases, the treatment keeps the eye in place, which is better than having a prosthesis.

In cases of advanced retinoblastoma, removing one eye (when the fellow eye is intact) will allow the child to have fully functional vision—and is a life-saving procedure. However, some retinoblastoma involve both eyes. Retinoblastoma is often discovered before three years of age at an advanced stage because young children do not complain about loss of vision in only one eye. By the time white discoloration of the pupil is noticeable, the tumor is already large.

Using moving X-rays, an interventional radiologist threads a catheter up the femoral artery, guides it to the ophthalmic artery (feeding the eye and the tumor) and then injects the drug. The tumor visibly shrinks within three weeks.

Intravenous chemotherapy is not very effective because perhaps less than 1 percent actually reaches the eye. By delivering the drug directly to the eye, a curative drug concentration can be achieved, while sparing the healthy tissue in the body.

In some cases of retinal detachment, the interventional treatment also allowed recovery of some vision. The interventional treatment is especially important in bilateral (both eyes) retinoblastoma, where vision could be lost entirely.

"We are hopeful that this interventional treatment may avoid removal of the eye in advanced tumors and even replace conventional (whole body) chemotherapy and radiation therapy in less advanced forms of retinoblastoma. Our work comes from the collaboration between an interventional radiologist, an ophthalmologist specialist in cancer and a pediatric oncologist. Modern medicine is so complex that new treatments are often discovered by physicians working in a team," explained Gobin.

This experimental treatment, which has minimal side effects, is being performed only at New York-Presbyterian Hospital/Weill Cornell Medical Center and Memorial Sloan-Kettering Cancer.

Interventional radiology is a subspecialty of medicine that specializes in minimally invasive treatments that often replace open surgery and works with other specialists across every specialty area of medicine.

Abstract 60, "A Phase I/II Study of Intra-arterial (Ophthalmic Artery) Chemotherapy for Intraocular Retinoblastoma," can be found at <u>www.SIRmeeting.org</u>.

#### About Retinoblastoma

In the United States, about 300 children and adolescents are diagnosed with retinoblastoma each year, with almost two-thirds (63 percent) of all cases occurring before the age of two years, according to National Cancer Institute statistics. Retinoblastoma tumors start in the retina, the very back portion of the eye; they are caused by a gene mutation and occur once in every 15,000 to 16,000 births. In most cases, the mutation occurs in a single cell in the eye, so only that eye develops a tumor. Scientists do not yet know why these sporadic mutations occur. If left untreated, the tumors can spread to the brain via the optic nerve. One-half of the children in the world who develop this cancer will die.

#### **About Intra-arterial Chemotherapy**

Each interventional chemotherapy treatment is performed with the child asleep (under general anesthesia). An artery is punctured at the groin and a microcatheter (a tiny plastic tube) is threaded up into the artery of the affected eye. The chemotherapy drug, Melphalan, is injected, so the eye receives a large dose of the drug while the rest of the body receives a small dose. The retinoblastoma is very sensitive to Melphalan, and the eye tolerates the drug well while the rest of the body receives a non-toxic dose. Three intra-arterial chemotherapy treatments are usually sufficient; however, physicians have given up to six treatments.

## About the Society of Interventional Radiology

Interventional radiologists are physicians who specialize in minimally invasive, targeted treatments. They offer the most in-depth knowledge of the least invasive treatments available coupled with diagnostic and clinical experience across all specialties. They use

X-ray, MRI and other imaging to advance a catheter in the body, usually in an artery, to treat at the source of the disease internally. As the inventors of angioplasty and the catheter-delivered stent, which were first used in the legs to treat peripheral arterial disease, interventional radiologists pioneered minimally invasive modern medicine. Interventional oncology is a growing specialty area of interventional radiology.

Today many conditions that once required surgery can be treated less invasively by interventional radiologists. Interventional radiology treatments offer less risk, less pain and less recovery time compared to open surgery. Visit <u>www.SIRweb.org</u>.

# Local interviews and medical illustrations are available by contacting SIR's communications department at <u>mverrillo@SIRweb.org</u>.

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