Toward a nanomedicine for brain cancer

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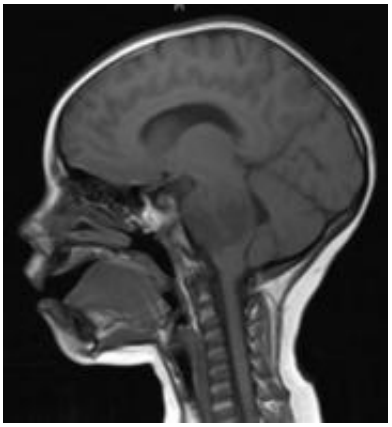

Brain cancer cells like those in this tumor could someday become the target of nanoparticles that in lab experiments seek out and destroy brain cancer cells without harming healthy cells. Credit: Wikimedia Commons

In an advance toward better treatments for the most serious form of brain cancer, scientists in Illinois are reporting development of the first nanoparticles that seek out and destroy brain cancer cells without damaging nearby healthy cells. The study is scheduled for the Sept. 9 issue of ACS' *Nano Letters*.

Elena Rozhkova and colleagues note the pressing need for new ways to treat the disease, glioblastoma multiforme (GBM), which often causes death within months of diagnosis. Recent studies show that titanium dioxide nanoparticles, a type of light-sensitive material widely used in sunscreens, cosmetics, and even wastewater treatment, can destroy some

cancer cells when the chemical is exposed to ultraviolet light. However, scientists have had difficulty getting nanoparticles, each about 1/50,000th the width of a human hair, to target and enter cancer cells while avoiding healthy cells.

The scientists' solution involves chemically linked titanium dioxide nanoparticles to an antibody that recognizes and attaches to GMB cells. When they exposed cultured human GMB cells to these so-called "nanobio hybrids," the nanoparticles killed up to 80 percent of the brain cancer cells after 5 minutes of exposure to focused white light. The results suggest that these nanoparticles could become a promising part of brain cancer therapy, when used during surgery, the researchers say.

More information: "A High-Performance Nanobio Photocatalyst for Targeted Brain Cancer Therapy", Nano Letters.

Source: American Chemical Society (news : web)