

## Blood pressure drugs may lengthen lives of melanoma patients

September 20 2011, by Earle Holland

Beta-blocker drugs, commonly used to treat high blood pressure, may also play a major role in slowing the progression of certain serious cancers, based on a new study.

A review of thousands of <u>medical records</u> in the Danish Cancer Registry showed that patients with the <u>skin cancer melanoma</u>, and who also were taking a specific beta-blocker, had much lower <u>mortality rates</u> than did patients not taking the drug.

The report, published in the current issue of the journal *Cancer Epidemiology, Biomarkers & Prevention*, summarized the work of a team of researchers at Ohio State University's Institute for Behavioral Medicine Research (IBMR) and the Comprehensive Cancer Center.

If the results are confirmed in a planned clinical trial, this might be an additional adjunct treatment for cancer patients facing a poor prognosis.

At the center of this research is the fact that certain molecules that play important roles in the immune system also appear to promote both tumor growth and metastasis, the shedding and spreading of tumor tissue to other parts of the body.

"The work started with some earlier studies where we discovered that certain tumor cells had receptors to two specific catecholamine stress hormones – epinephrine and norepinephrine," explained Ron Glaser, professor of molecular virology, immunology and medical genetics and



director of the IBMR.

"When either of these hormones bind to the tumor cell receptors, it stimulates the production of vascular endothelial growth factor (VEGF), interleukin-8 (IL-8), interleukin-6 (IL-6) and certain matrix metalloproteins – all molecules known to stimulate blood flow to tumors, enhancing their growth, and promoting metastasis."

The earlier studies first used tissue from a nasopharyngeal carcinoma cell line, and later from both multiple myeloma and melanoma cell lines. When treated with the beta-blocker propranol, all cells stopped producing the tumor-enhancing molecules. Similar work by other scientists showed similar results with ovarian cancer tissues.

Then the team turned to Stanley Lemeshow, a professor and dean of the College of Public Health at Ohio State. Lemeshow had previously partnered with colleagues in Denmark and knew that country had a vast database of patient information, including records of all Danish cancer patients for decades, as well as pharmacy records of all drugs prescribed for those patients.

"These databases can be linked together and by doing so, you have the ability to find patients with melanoma who had previously been prescribed beta-blockers," Lemeshow said.

The researchers looked at melanoma patients who had taken betablockers and at those who hadn't to determine whether the former group exhibited longer survival.

"Among patients diagnosed with melanoma, those who were taking betablockers when their cancer was diagnosed experienced longer survival than those patients who weren't taking the drug," Lemeshow said.



"Their chance of surviving for a specified number of years improved by 13 percent."

When the researcher looked at all causes of death among melanoma patients – not just melanoma – their chances of survival were improved by 19 percent.

"We're talking about survival time, here. They simply lived longer."

Eric Yang, an associate member of the IBMR and assistant research professor of internal medicine, said that epinephrine and norepinephrine may stimulate, or induce, the production of these tumor-promoting molecules.

"The idea is that if you treat a patient with beta-blockers, then you can counteract 'epi' and 'norepi' and lower the amounts of those molecules that induce tumor progression, perhaps halting it," Yang said.

That's the idea behind the clinical trial the researchers hope to begin soon.

"That's what has us so excited," Glaser explained. "This drug is relatively inexpensive. It isn't chemotherapy so you don't lose your hair or get sick. It doesn't kill the <u>cancer</u> cells, but it may slow the disease.

"This would be adjunct therapy that could be provided in addition to the normal chemotherapy patients receive."

"So far, we've found an association between beta-blocker use and survival time for melanoma patients," Lemeshow said. "The clinical trial should give us even stronger evidence."



## Provided by The Ohio State University

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