Possible new therapy for the treatment of myeloma

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(Medical Xpress)—Research from Karolinska Institutet shows that sorafenib, a drug used for advanced cancer of the kidneys and liver, could also be effective against multiple myeloma. The disease is one of the more common forms of blood cancer and is generally incurable.

"Recently developed drugs, like bortezomib, have increased the survival rate for people with this serious and complex disease," says study leader Theocharis Panaretakis, docent of experimental oncology. "Having said this, the heterogeneity of the disease progression, the treatment response and the development of resistance to administered drugs which leads to the relapse of nearly all patients, has compelled us to find new and better treatments."

Myeloma is only found in adults; it is uncommon before the age of 40, and most patients are over 60 years when diagnosed. The disease can lie dormant in the body for many years, but only becomes life-threatening and requires treatment once the patient has begun to exhibit symptoms.

The myeloma cells are mainly located in the bone marrow, and since this is where blood cells are produced, their presence seriously disrupts regular blood production. Malignant cancer cells or tumours can also accumulate outside the bone marrow, hence the term 'multiple'.

A common effect of multiple myeloma is osteoporosis, and as a consequence patients develop intense back pain as their vertebrae become compressed as well as bone fractures. Other symptoms are

anaemia, fatigue, renal failure and, often, a greater susceptibility to infection.

The current study, which is published in the scientific journal *Cancer Research*, was conducted on cell samples from humans and mice (cell lines). Almost all myeloma patients, seen at Karolinska University Hospital, were previously untreated.

The researchers show how sorafenib induces cell death in human myeloma cell lines in a laboratory environment by preventing a certain kind of protein-level activity, an effect that also was achieved when the myeloma cells had developed a resistance to bortezomib. They also tested sorafenib in live mice and found that the drug either prevented or delayed the course of the disease. All in all, the researchers maintain that their results support the use of sorafenib in combination with other drugs in the treatment of multiple myeloma.

More information: Sorafenib has potent anti-tumor activity against multiple myeloma in vitro, ex vivo and in vivo, in the 5T33MM mouse model, *Cancer Research*, online first 4 September 2012, doi: 10.1158/0008-5472.CAN-12-0658

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