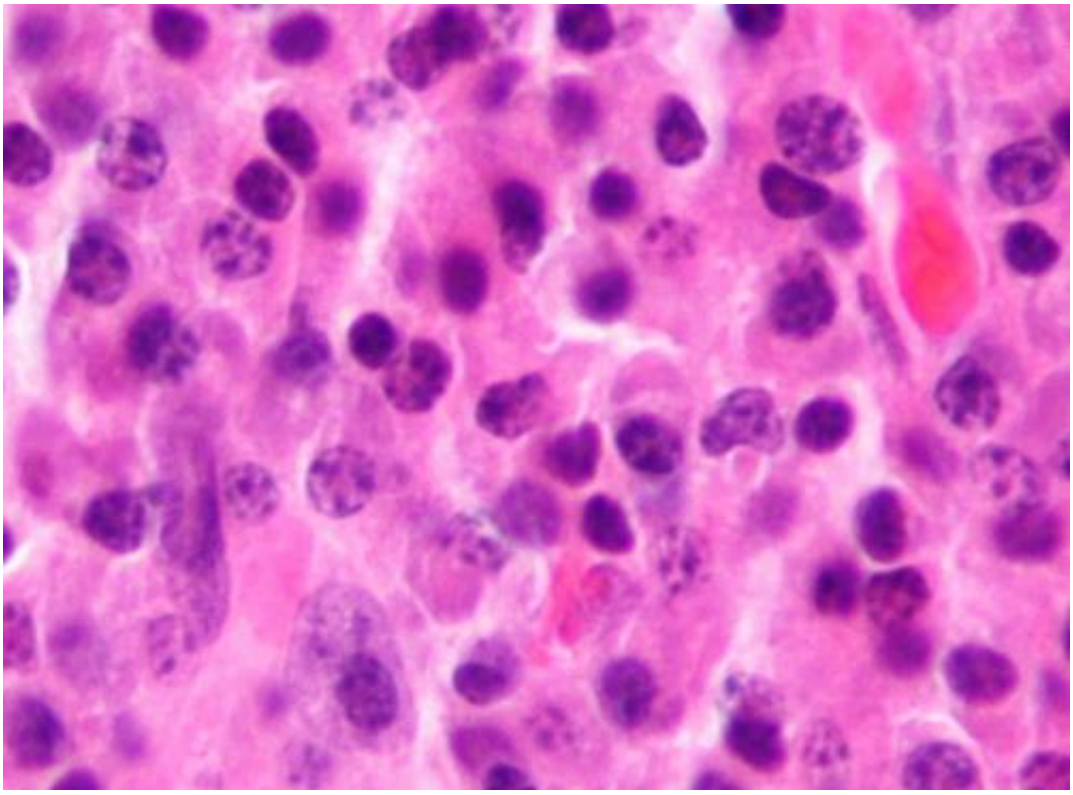
Research team first to identify AF1q protein associated with multiple myeloma, EMD

June 10 2016



Micrograph of a plasmacytoma, the histologic correlate of multiple myeloma. H&E stain. Credit: Wikipedia/CC BY-SA 3.0

A group of researchers from the University of Louisville, Japan and Austria is the first to identify a protein, AF1q, associated with multiple myeloma and a condition that occurs in approximately one-fourth of very aggressive multiple myeloma, extramedullary disease or EMD.

The group will present their findings at the European Hematology Association's 21st Congress, June 10-12, in Copenhagen, Denmark. Their presentation is entitled "High expression of AF1q is an adverse prognostic factor and a prediction marker of extramedullary disease in multiple myeloma."

William Tse, M.D., the Marion F. Beard Endowed Chair in Hematology and chief of the Division of Blood and Bone Marrow Transplantation at UofL, was senior investigator on the project, working with researchers in Tokyo and Vienna.

Multiple myeloma is one of four types of myeloma and the most prevalent. It is a form of blood cancer that develops in the bone marrow. In multiple myeloma, normal plasma cells transform into malignant myeloma cells and produce large quantities of toxic abnormal immunoglobulin called monoclonal protein that can damage multiple organs. The monoclonal protein produced by the myeloma cells interferes with normal blood cell production.

The American Cancer Society estimates that 30,330 new cases of multiple myeloma will occur in the United States in 2016 and about 12,600 people will die from it.

Approximately 25 percent of patients with multiple myeloma also simultaneously develop extramedullary disease. This disease occurs when the myeloma cells form tumors outside of the bone marrow in the soft tissues or organs of the body. The prognosis of myeloma patients with EMD behaves like other metastatic cancers and is extremely poor because its clinical course is very aggressive, Tse said.

"We know that multiple myeloma with EMD involvement has an extremely poor outcome," Tse said. "However, not much is known about the mechanism in which EMD progresses."

The group looked at an oncogene, AF1q discovered in Tse's lab, which is expressed in hematological cancer cells and is known to be related to multiple myeloma. Its presence indicates a poor prognosis for the patient.

Tse and the team analyzed the degree of expression of AF1q in 117 patients with multiple myeloma. They found that EMD was present in 25 percent of patients with a low AF1q expression and in 44.7 percent of patients with a high AF1q expression.

"We found that the incidence of EMD was significantly higher in patients with high expression of AF1q than those with low expression," Tse said. "The significance of this finding gives us a tentative approach to target this marker and could lead to new therapies for this subtype of myeloma."

Tse's research team included Drs. Shotaro Hagiwara, the lead author and chief of hematology, and Sohtaro Mine of the National Center for Global Health and Medicine in Tokyo, Ana-Iris Schiefer of the Medical University of Vienna and Lukas Kenner of the Ludwig Boltzmann Institute for Cancer Research and Medical University of Vienna. The study patient cohort was organized by Hagiwara.

Tse practices with University of Louisville Physicians-Medical Oncology/Hematology and with UofL's James Graham Brown Cancer Center, a part of KentuckyOne Health.

Provided by University of Louisville