CU Cancer Center Hosts Conference on Kaposi Sarcoma Herpesvirus

Researchers from around the globe gathered to discuss the virus that causes Kaposi sarcoma.

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Some 100 researchers from around the world were in Aurora last week to discuss the latest findings and news around Kaposi sarcoma herpesvirus (KSHV), the virus that causes a type of cancer known as Kaposi sarcoma.

The 24th annual KSHV Conference — the first in-person KSHV conference since 2019 — was hosted by the University of Colorado School of Medicine and the CU Cancer Center and took place July 10–13 at the Hyatt Regency across the street from the CU Anschutz Medical Campus.

“The intent of the meeting is to cover the full range of research on KSHV,” says CU Cancer Center member Eric Clambey, PhD, one of four faculty members from the CU School of Medicine who helped to organize the conference. “That includes everything from basic studies about how the virus grows and how it infects our cells all the way up to epidemiological studies — looking at how the virus is transmitted between individuals, as well as the cancers that KSHV causes.”

How KSHV works

Part of larger group of viruses that are associated with human cancers, including Epstein-Barr virus and human papillomavirus, KSHV can infect multiple cells in the body. In the case of Kaposi sarcoma, KSHV can infect endothelial cells, the cells that line blood and lymphatic vessels, causing them to divide too much and live longer than they should. When the endothelial cells form new blood vessels and begin to increase the production of chemicals that cause inflammation, cancer cells can start to grow. Kaposi sarcoma usually appears as tumors on the skin or on mucosal surfaces —inside the mouth or nose, for example — but tumors can also develop in other parts of the body, including the lymph nodes, lungs, or digestive tract.

Kaposi sarcoma is typically characterized by skin lesions — purple, red, or brown blotches or tumors on the skin — most often on the legs or face. In the U.S., Kaposi sarcoma occurs most often in people infected with human immunodeficiency virus (HIV). Most people infected with KSHV never show symptoms, but when a disease like AIDS suppresses the immune system, the cancer can start to form.

“One of the first signs of the AIDS epidemic were individuals being diagnosed with extremely unusual infections and cancers,” says Clambey, director of the Flow Cytometry Shared Resource within the CU Cancer Center. “And Kaposi sarcoma was one of these rare cancers that suddenly became much more prevalent in people with AIDS. Once people started seeing more of the Kaposi sarcoma tumor, that led to research that identified KSHV.”

Research on causes and treatment

The CU Cancer Center is one of several institutions looking to better understand how KSHV enters the body and establishes a lifelong infection. It’s an especially pressing problem in Africa, where up to 80% of the population in sub-Saharan countries can show signs of KSHV infection. CU Cancer Center member Rosemary Rochford, PhD — one of the KSHV Conference organizers — recently contributed to a paper on the environmental determinants of KSHV transmission in rural Uganda—primarily the risk that malaria poses to increasing an infant’s susceptibility to KSHV infection.

“The reason that this remains a significant area of interest is that there aren’t good interventions to either prevent infection or to treat people who have KSHV-associated cancers,” Clambey says. “Even in the U.S., there are populations in the South who have undiagnosed HIV and are still presenting with Kaposi sarcoma.”

Currently there is no vaccine for KSHV, but Clambey’s research with CU Cancer Center member Linda van Dyk, PhD — another KSHV Conference organizer — is in the early stages of trying to find one. To do this, the researchers are using animal models of a similar virus to understand how a vaccine could work to block infection, and when a vaccine might fail.

“One of the challenges when considering vaccination is that this virus causes cancer in people with a suppressed immune system,” Clambey says. “If you’re vaccinated and then you later become immunosuppressed, will your vaccine still provide protection? This challenge isn’t unique to KSHV. Even in the COVID-19 pandemic, we’ve seen cancer patients who are vaccinated against SARS-CoV-2 who don’t get the same benefits from the vaccine as others because they are immunocompromised.”

Other research presented at the KSHV conference included studies investigating risk factors, better diagnosis using biomarkers (including work presented by Thomas Campbell, MD, another KSHV Conference organizer), and possible therapeutic interventions. In addition to Kaposi sarcoma, the virus can cause multicentric Castleman disease, primary effusion lymphoma, and KSHV inflammatory cytokine syndrome. How this virus causes multiple different diseases remains an important, ongoing area of investigation discussed at the conference.

“We’re interested in understanding how this virus establishes a lifelong infection, and how we can intervene to either disrupt that lifelong infection or to allow our bodies to better control that infection,” Clambey says. “We want to make it so that years later, if you become immunosuppressed, you’re not going to develop cancer.”

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