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Association between human herpes 8 infection and ketotic type 2 diabetes

An atypical form of type 2 diabetes that presents with ketosis in sub-Saharan blacks has been found to be associated with human herpesvirus 8 (HHV-8), according to a recent paper published in the *Journal of the American Medical Association*.

Eugene Sobngwi and colleagues carried out a cross-sectional study in which antibodies were searched against latent and lytic HHV-8 antigens using immunofluorescence. The presence of HHV-8 in genomic DNA was investigated in 22 of the participants at clinical onset of diabetes. They also tested whether HHV-8 was able to infect human pancreatic β cells in culture *in vitro*. The study was conducted at Saint Louis University Hospital, Paris, France, from January 2004 to July 2005. All participants were black and of African origin: 187 were consecutive diabetic patients of whom 81 had ketosis-prone diabetes mellitus type 2 (DM-2) and 106 had non-ketotic DM-2, and 90 individuals were non-diabetic control participants who were matched for age and sex.

HHV-8 antibodies were found in 71 patients (87.7%) with ketosis-prone DM-2 versus 16 patients (15.1%) with non-ketotic DM-2 (odds ratio (OR) 39.9; 95% confidence interval (CI) 17.1 - 93.4; $p < 0.001$) and 36 of the control participants (40.0%) (OR 10.7; 95% CI 4.9 - 23.4; $p < 0.001$). HHV-8 in genomic DNA was present in 6 of 13 patients with ketosis-prone DM-2 tested at acute onset and in 0 of 9 patients with non-ketotic DM-2. HHV-8 proteins were present in human islet cells that were cultured for 4 days in the presence of HHV-8.

They concluded that the presence of HHV-8 antibodies was associated with ketosis-prone DM-2 in patients of sub-Saharan African origin. Longitudinal studies are required to understand the clinical significance of these findings.

Sobngwi E, et al. *JAMA* 2008; 299: 2770-2776.

Internet trawler used to track emerging infectious diseases

An automated data-gathering system that trawls the Internet to gather information from non-traditional sources such as online news outlets, discussion forums, and government websites is proving effective in tracking emerging infectious diseases, says a new study.

Researchers from the Children's Hospital Boston and Harvard Medical School developed HealthMap as a freely accessible and automated system that monitors and organises information on emerging diseases in real time.

'Web-based sources can play an important role in early event detection ... by providing current, highly local information about outbreaks, even from areas relatively invisible to traditional global public health efforts,' they wrote.

The existing network of traditional surveillance systems managed by health organisations and multinational agencies has wide gaps in geographical coverage and often suffers from poor information flow across national borders, they say.

'At the same time,' explained the study's lead author, John Brownstein, assistant professor of paediatrics at the Boston Children's Hospital and Harvard Medical School, 'an enormous amount of valuable information about infectious diseases is found in web accessible information such as discussion sites, disease reporting networks, and news outlets.'

Although these new sources are potentially useful, triggering most outbreak verifications now carried out by the World Health Organization, it can be difficult to cope with the volume of information and to distinguish 'signal from noise'.

HealthMap continually collects reports of new and ongoing outbreaks of infectious disease and then uses software similar to spam filters to integrate and filter the information to provide online summaries.

It currently gathers reports from 14 sources, including Google News and

expert discussion sites, which summarise information from more than 20 000 different websites. The search criteria include disease names, symptoms, and keywords. The system collects an average of 300 reports a day, most of which (85%) come from news media sources. The articles are analysed for duplication and content. Duplicate articles are removed, while those that discuss new information about an ongoing situation are integrated with other relevant articles and added to an interactive map.

New data based on an evaluation of HealthMap over 43 weeks from 1 October 2006 to 18 July 2007 showed that reports on a wide variety of pathogens were detected, with information on 141 unique infectious disease categories reported through the Google News feed alone. The frequency of reports about particular pathogens was related to the direct or potential economic and social disruption rather than the associated morbidity or mortality. The greatest number of reports were for avian influenza (877) and *Escherichia coli* (733), followed by salmonella (479).

Over the study period reports of outbreaks of infectious disease occurred in 174 countries, with the greatest number from the USA (4 351 reports), the UK (1 018), Canada (880), and China (737). A clear bias was shown towards greater reporting from countries with more media outlets, more developed public health resources, and greater availability of electronic communication.

The research group is now developing ways to improve coverage. In particular they want more information from Africa and South America, which have the highest risk and burden of emerging infectious diseases. To achieve this they are looking at monitoring other Internet sources, such as blogs, discussion sites, and listservs (automated e-mail forwarding systems that allow any member of a group of people to e-mail all other members).

'We are also developing contacts with people in developing countries to provide further information,' said Clark Freifeld, a research software developer at the Boston Children's Hospital and Harvard Medical School.

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Comparing HealthMap with reports of emerging outbreaks from existing agencies has shown its validity. Examples include a recent outbreak of salmonella associated with tomatoes in the USA, which was tracked by an increase in news reports of gastrointestinal disease in New Mexico, and the case of a UK teacher who contracted tuberculosis in Hong Kong.

The project is being funded by Google.org, the philanthropic arm of Google.

Brownstein J, et al. *PLoS Med* 2008; 5:e151 doi: 10.1371/journal.pmed.0050151.

Maintaining muscular strength decreases risk of cardiovascular disease and cancer

According to this study published recently in the *British Medical Journal*, men who maintain their muscular strength reduce their risk of cardiovascular disease

and cancers, independently of general cardiovascular fitness.

The authors set out to examine prospectively the association between muscular strength and mortality from all causes, cardiovascular disease, and cancer in men.

They enrolled 8 762 men aged between 20 and 80 and the main outcome measure was all-cause mortality during an average follow-up of 18.9 years.

They found that 503 deaths occurred (145 cardiovascular disease, 199 cancer). Age-adjusted death rates per 10 000 person years across incremental thirds of muscular strength were 38.9, 25.9, and 26.6 for all causes; 12.1, 7.6, and 6.6 for cardiovascular disease; and 6.1, 4.9, and 4.2 for cancer (all $p < 0.01$ for linear trend). After adjusting for age, physical activity, smoking, alcohol intake, body mass index, baseline medical conditions, and family history of cardiovascular disease, hazard ratios across incremental thirds of muscular strength for all-cause mortality

were 1.0 (referent), 0.72 (95% confidence interval 0.58 - 0.90), and 0.77 (0.62 - 0.96); for death from cardiovascular disease were 1.0 (referent), 0.74 (0.50 - 1.10), and 0.71 (0.47 - 1.07); and for death from cancer were 1.0 (referent), 0.72 (0.51 - 1.00), and 0.68 (0.48 - 0.97). The pattern of the association between muscular strength and death from all causes and cancer persisted after further adjustment for cardiorespiratory fitness; however, the association between muscular strength and death from cardiovascular disease was attenuated after further adjustment for cardiorespiratory fitness.

The conclusion was that muscular strength is inversely and independently associated with death from all causes and cancer in men, even after adjusting for cardiorespiratory fitness and other potential confounders.

Ruiz JR, et al. *BMJ* 2008; 337: a439.

BRIDGET FARHAM

Single suture

Glioblastoma is two separate cancers

The most common type of brain cancer in adults, glioblastoma, should be treated as two diseases and not as one. The key lies in a gene mutation, according to Victor Velculescu of the Ludwig Center for Cancer Genetics and Therapeutics in Baltimore, Maryland.

Glioblastoma patients whose cancers carry the mutation *IHD1* are 20 years younger, on average, than those who do not carry the mutation. Cancers carrying the mutation are also less aggressive, with a median survival of 3.8 years compared with 1.1 years for those suffering cancers that do not carry the mutation.

According to researchers, current drugs do not target *IHD1*, so patients with this mutation may respond differently to the drugs that are now used. The researchers identified the genetic mutation after sequencing the DNA from 22 human glioblastoma samples.

New Scientist 2008; 13 September: 16.