630 min/person/week in the former compared with 223 min/person/week in the control group; P = 0.01.

The relationship between rCP and self-reported hypoglycaemia was then examined in 465 patients with insulin-treated diabetes. Of these, 256 had type 2 diabetes and 209 type 1. All study participants were assessed for hypoglycaemia using a baseline questionnaire.

The relationship between self-reported hypoglycaemia and rCP was similar in patients with type 1 and type 2 diabetes.

Self-reported hypoglycaemia was twice as frequent in those with rCP < 200 pmol/L; OR 2.0, P < 0.001. The rate of episodes resulting in loss of consciousness or seizures was five times higher in this group; OR = 5, P = 0.001.

The study authors conclude: 'Low rCP is associated with increased glucose variability and hypoglycaemia in patients with insulin-treated type 2 diabetes and represents a practical, stable and inexpensive biomarker for assessment of hypoglycaemia risk.'

A single, readily available, laboratory test predicted which patients would be at higher risk of clinically significant hypoglycaemia. If validated it could be incorporated into future guidance, and would be particularly useful when considering advice for patients about driving.

DR MATTHEW LOCKYER

Hope SV, Knight BA, Shields BM et al. Random non-fasting C-peptide testing can identify patients with insulin-treated type 2 diabetes at high risk of hypoglycaemia. *Diabetologia* 2018;61(1):66-74

Sexual health

Composition of vaginal microbiota may increase risk of chlamydia infection

Lactobacillus iners-dominated vaginal microbiota was associated with increased susceptibility to *Chlamydia trachomatis* infection in women, in a Dutch nested case-control study.

The population base was from a large trial to investigate effectiveness of screening for chlamydia infection in the Netherlands where eligible sexually active men and women, aged 16-29 years, were offered yearly repeated chlamydia screening.

Women who tested negative for chlamydia and subsequently tested positive the following year were selected. These cases were matched, by age and ethnicity, to women who tested negative for chlamydia for two consecutive years.

The vaginal microbiota was profiled at baseline and prior to infection to evaluate changes related to chlamydia acquisition. DNA was extracted from stored vaginal swabs and sequencing was used to identify vaginal microbes.

A total of 5,458 women took part in the chlamydia screening trial, returned screening swabs at least twice and completed a questionnaire covering sexual risk behaviour and medical history. Of these women 3,503 (64%) had two yearly consecutive screenings and a negative chlamydia test at their first visit; 61 tested positive on a subsequent test and these cases were matched with 61 controls for the nested case-control study.

Information on vaginal microbiota was available for 60 of the cases and 55 controls. Five vaginal community state types (CSTs I to V) were identified; four were dominated by Lactobacillus species of which *L. crispatus* (37%) and *L. iners* (33%) were most common. CST IV had depletion of Lactobacillus spp. and presence of anaerobic bacteria; this was found in 25% of women in the study. Ethnicities were evenly distributed across all CSTs.

Chlamydia acquisition was strongly associated with vaginal microbiota dominated by *L. iners* (CST III). Multivariate logistic regression analysis demonstrated that those women with *L. iners*-dominated CST had more than double the risk of chlamydia infection; odds ratio (OR) 2.6 (95% CI: 1.0-6.6; P = 0.04).

Age, education, ethnicity, mean age of first sexual contact, and number of sexual partners in the previous six months were not significantly associated with acquiring chlamydia infection.

Lactobacillus species are commonly found in the vaginal environment, and they have previously been shown to have a protective role against other organisms that cause infections. It has also been shown that chlamydia infection in women is associated with depletion of Lactobacillus spp.

However, the findings of this study challenge our assumption that having predominantly Lactobacillus spp. in the vagina is protective.

The authors conclude that the specific species or possibly even the strain of Lactobacillus is important in determining whether the vaginal microbiota can contribute to susceptibility to, or protection against, chlamydia infection.

DR RICHARD MA

van Houdt R, Ma B, Bruisten SM et al. *Lactobacillus iners*-dominated vaginal microbiota is associated with increased susceptibility to *Chlamydia trachomatis* infection in Dutch women. *Sex Transm Inf* 2018;94:117-23

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