

Society for Endocrinology media release



Embargoed until 21.00 GMT, Tuesday 20 March 2012

PCOS identified as cardiovascular and diabetes risk factor

A diagnosis of polycystic ovary syndrome (PCOS) can signal that a woman is more likely to develop cardiovascular disease and diabetes, according to two separate studies presented this week at the Society for Endocrinology annual meeting in Harrogate. The findings should alert women with PCOS and their doctors to these serious health risks, which can often be reduced via timely lifestyle interventions.

PCOS occurs when the ovaries produce excessive amounts of male hormone (testosterone), although what causes this is as yet poorly understood. A link between PCOS and other long-term conditions has long been suspected due to this imbalance of sex hormones. PCOS is estimated to affect 5-10% of women of reproductive age and may cause menstrual problems often with associated infertility, abnormal hair growth (hirsutism) and other symptoms such as greasy skin and weight gain.

In the first study, researchers led by Dr Trevor Howlett, Consultant Endocrinologist at University Hospitals of Leicester NHS Trust, analysed data on cardiovascular events in women presenting with PCOS to Leicestershire's main endocrine clinics over 20 years (n=2,353), and compared this with data on the local background female population (controls, n=432,506). They found that cardiovascular disease occurred significantly more frequently in women with PCOS aged 45 or older: the prevalence of heart attack and angina in women aged 45-54 was 1.9% and 2.5% in women with PCOS vs. 0.2% and 0.8% in age-matched controls (p<0.0001) and remained significantly higher for heart attack in older women (those aged 55+, p<0.0001).

Dr Trevor Howlett, Lead Investigator and Consultant Endocrinologist at University Hospitals of Leicester NHS Trust, said:

"Our study clearly shows that a simple diagnosis of PCOS is associated with an increased risk of developing cardiovascular disease many years later, with cardiovascular events occurring almost 10 times more frequently in some age groups. The precise mechanism which results in this increased risk remains uncertain, but this information certainly highlights the need to consider cardiovascular risk in women with this common condition, and to prompt lifestyle changes, such as eating a healthy diet, maintaining a healthy weight, and stopping smoking, which have been proven to reduce the overall risk of cardiovascular disease. On the back of this research, we are currently developing lifestyle intervention and education programmes for women with PCOS on this very theme."

In another study to be presented at the Society for Endocrinology annual meeting, researchers led by Dr Aled Rees from Cardiff University, UK, selected 21,734 young women (average age

27 years) with a new or recent diagnosis of PCOS between 1990 and 2010 from the General Practice Research Database and matched them to 86, 936 controls. In one group the subjects were matched to women without PCOS who were treated in the same practice and were of a similar age. In a second subjects were additionally matched by weight (BMI). In the first group they found that women with PCOS were three times more likely to develop type 2 diabetes than controls ('time to diabetes' hazard ratio = 3.015, $p < 0.001$, adjusted for practice and age). In the second group (matched by practice, age and BMI) the additional risk of developing diabetes dropped to 1.785 ($p < 0.001$). The risk of developing type 2 diabetes thus appears to be linked in part to BMI, making weight management a crucial aspect of care for these patients. The study also found no link between PCOS and large vessel disease, cancer or death in these young women.

Dr Aled Rees, Lead researcher and Senior Lecturer and Consultant Endocrinologist at Cardiff University said:

“Our study is the first to show that an increased risk of diabetes in women with PCOS can be modified by weight gain. Women given a diagnosis of PCOS can be reassured that their higher risk of diabetes can be at least partly reduced through maintaining a healthy weight, which can also help with the symptoms of PCOS itself. Our research indicates that close monitoring of PCOS patients who have difficulty managing their weight could help to catch the development of diabetes early.”

These studies confirm that women diagnosed with PCOS are more likely to encounter certain chronic conditions later in life. Whilst the studies don't show the root cause, establishing PCOS as a risk factor for these conditions is useful in itself: evidence shows that lifestyle interventions can be effective in mitigating, stalling or even preventing cardiovascular disease and diabetes.

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Notes for editors:

This research will be presented as two lectures (OC2.7 and OC3.3) at the Society for Endocrinology BES meeting at 17:30 on Monday 19 March and 08:45 on Tuesday 20 March 2012 respectively. The abstracts for these lectures are reproduced at: <http://www.endocrine-abstracts.org/ea/0028/ea0028oc2.7.htm> and <http://www.endocrine-abstracts.org/ea/0028/ea0028oc3.3.htm>.

The Society for Endocrinology BES 2012 conference is Britain's biggest scientific meeting on hormones, and is taking place at the Harrogate International Centre from 19-22 March 2012. For the full programme, please click [here](#)

Please mention the Society for Endocrinology meeting in any story

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The Society for Endocrinology is Britain's national organisation promoting endocrinology and hormone awareness. For general information, please visit our website: <http://www.endocrinology.org>

For more information aimed at the general public on PCOS, endocrinology and hormones please visit You & Your Hormones (www.yourhormones.info), the Society for Endocrinology's public information website.

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ABSTRACT 1

Increased cardiovascular events in women with Polycystic Ovary Syndrome: retrospective analysis of a large database

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Introduction Women with PCOS share the underlying pathology of insulin resistance with diabetes, metabolic syndrome and have increased prevalence of obesity. Despite these well established risk factors data on long term cardiovascular outcomes are limited and conflicting.

Methodology

Retrospective analysis of a multi-ethnic database of all women with PCOS attending one UK endocrine unit between 1988 and 2009. Cardiovascular (CV) events were identified by anonymised data linkage in a community database containing diagnostic coding from all local hospital admission episodes. Individuals were followed up after their earliest registration time until they had a CV event or censored (death, migration or end of observation). Prevalence of the CV events was compared with the local female population (LFP; n=432506).

Results

2353 PCOS patients were identified: 64.7% white; 29.1% South Asian. Mean age at the end of observation was 32.8 years (SD 10.9). Cumulative observation period was 17314 person-years with a mean observation of 7.4 years (SD 7.3).

There were 49 CV events in PCOS patients; myocardial infarction (MI=16), Stroke (n=1), heart failure (HF=5), angina (n=22) and death (n=5) in 31 patients. Age specific prevalence of MI, and angina in 45-54 year old women with PCOS were significantly higher compared to the LFP (1.9% and 2.5% vs 0.2% and 0.8% respectively; P<0.0001). Prevalence remained significantly higher (P < 0.0001) for MI in older age groups.

Cumulative incidence of MI and Angina, were respectively 92.4 and 127.1/ 100,000 person-years (national rate 46 and 25.2 respectively). Age specific cardiovascular mortality was also higher in PCOS group compared to national rates; 33.5 vs 4, 76.2 vs 14 and 171 vs 47 in 35-44, 45-54 and 55-64 age groups respectively.

Discussion

Women with PCOS have a significantly higher prevalence and incidence of CVD compared to the local and national population. Early preventative lifestyle interventions should be considered in these women.

ABSTRACT 2

Risk of diabetes, cancer, large vessel disease and mortality in young women with Polycystic Ovary Syndrome: a retrospective database analysis

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Introduction

Polycystic Ovary Syndrome (PCOS) is associated with insulin resistance, hyperandrogenism and dyslipidaemia but the effects of these disturbances on long-term health are not known. We aim to determine the relative risk of diabetes, cancer, large vessel disease (LVD) and death for young women diagnosed with PCOS.

Methodology

Data were extracted from The General Practice Research Database (GPRD), a longitudinal, anonymised research database derived from over 590 primary care practices in the UK. Patients with a diagnosis of PCOS between 1990 and 2010 were selected. Patients were matched to two sets of controls at a ratio of 1:4. The first set were matched according to primary care practice and age, and the second were also matched on body mass index (BMI). Primary outcome was first incident record of diabetes. Crude rates for diabetes were presented and time to diabetes was analysed using Cox proportional hazard models (CPHM). Models were also created for PCOS patients stratified by therapy type. Secondary outcomes (cancer, LVD and death) were also modelled.

Results

Of 53,303 women identified with a diagnosis of PCOS, 21,896 (41.1%) met the eligibility criteria. Crude rates of diabetes were 6.7 and 2.0 per 1,000 patient years (kpy) for cases and controls respectively. In the CPHM, the hazard ratio (HR) was 3.057 (95%CI 2.793-3.347, $p < 0.001$). Of cases matched by BMI, crude rates of diabetes were 6.2 and 3.1 per kpy respectively. In the CPHM, the HR was 1.824 (95% CI 1.604-2.073). No significant difference in BMI-adjusted risk was found for cancer, LVD or death in either analysis.

Conclusions: Young women with PCOS are not at increased risk of LVD, cancer or death but have a significantly increased risk of diabetes which is modified by BMI.

N.B. The data presented in the press release is the most up-to-date data following reanalysis of that submitted in abstract 2, and is the data that will be presented at the conference.