ISP4: Markers of cardiovascular disease in the sleep apnea syndrome
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Sleep-disordered breathing (SDB) describes a group of disorders characterized by irregularities of respiration during sleep. The most common SDB is obstructive sleep apnea (OSA), characterized by recurrent constriction or closing of the upper airway due to reduction of muscle tone during sleep. The prevalence of OSA ranges from 7 to 25% in men and from 2 to 11% in women. Compared with the general population, OSA is more frequent in cohorts with hypertension (30–83%), diabetes (23–58%), heart failure (12–53%), ischemic heart disease (30–58%), and stroke (43–91%). Severe untreated OSA is associated with fatal and non-fatal cardiovascular events in comparison to healthy controls.

Coronary artery calcium (CAC) is a non-invasive measure of subclinical coronary atherosclerosis and a strong predictor of coronary and CVD events beyond established risk stratification algorithms. As both SDB and CAC predict CVD events, SDB and CAC may be associated even in early stages of CAD. To date, three studies have investigated this association. In a cohort of 202 patients with suspected sleep disorders SDB as defined by polysomnography (PSG) was found to be associated with subclinical coronary atherosclerosis quantified by CAC. In a community sample of 224 participants a higher apnea-hypopnea index (AHI) was associated with measurable CAC of any degree, relative to no CAC. In a cross-sectional community-based study, OSA and obesity were positively associated with the presence and extent of CAC, but only obesity and not OSA remained a significant independent contributor after adjustment for potential cardiovascular risk factors.

To date, population-based studies analyzing sex-specific associations between SDB and CAC in large scale population based samples are missing. In the Heinz Nixdorf Recall Study the prevalence of SDB in an unselected general population aged 50-80 years was studied. We also investigated the association of the AHI with traditional cardiovascular risk factors and subclinical coronary atherosclerosis as defined by the CAC score in both sexes.

ISP5: Metabolic disorders in the sleep apnea syndrome
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Obstructive Sleep Apnea (OSA) syndrome is much more of a problem than snoring and daytime sleepiness. Epidemiological studies have shown that people with OSA are more likely to develop hypertension and cardiovascular disease; associations which have been confirmed in mechanistic and intervention studies.

There are also now well-established associations of OSA with insulin resistance and the development of type 2 diabetes and the metabolic syndrome which are independent of obesity, and proportional to the severity of OSA as measured by the apnea-hypopnea index. The mechanisms underlying these associations are likely to be complex and include direct effects of repeated hypoxia on adipose tissue leading to an increased inflammatory response, activation of the sympathetic nervous system and hypothalamic adrenal-cortical axis due to repeated nocturnal arousals, all of which may then lead to decreased peripheral insulin sensitivity and decreased insulin secretion.

In those with established type 2 diabetes OSA may be present in up to 85% of patients depending on the diagnostic thresholds used and the population studied. Those with more severe OSA are more likely to have worse glycaemic control and recent work has suggested higher rates and greater severity of retinopathy in neuropathy if OSA is present, independent of glycaemic control as measured by HbA1c.

These observations raise the important question as to whether treatment of OSA with continuous positive airway pressure ventilation (CPAP) might have beneficial effects on glycaemic control in diabetes or on complication rates. Some uncontrolled studies have suggested modest benefits, and although the small controlled studies conducted so far have been negative, the question remains open. In the meantime it is important for clinicians to be aware of the associations between OSA and diabetes, and refer patients with symptoms of snoring and daytime sleepiness for appropriate investigation.

ISP6: Silent myocardial ischemia in diabetic patients
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Despite the intensified control of risk factors, silent myocardial ischemia (SMI) remains a frequent complication of diabetes and is still associated with a higher risk of cardiac events. However, screening all diabetic patients is not possible. The current recommendations for screening need to be improved and updated, including consideration of simple clinical risk factors and biological markers. The prognostic interest of screening diabetic patients for SMI is still under debate. Some studies have unsurprisingly shown that screening for SMI alone, without assessing coronary arteries by angiography nor changing treatment, did not improve the prognosis. Further intensified therapeutic objectives, choice of treatments, coronary artery revascularization should be considered but the benefit still needs to be evaluated in specific studies.

Some recent references
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ISP7: Care of the hyperglycaemic/diabetic patient during and in the immediate follow-up of acute coronary syndrome
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The Diabetes and Cardiovascular Disease study group of the Société Françophone du Diabète (SFD, French Society of Diabetes) in collaboration with the Société Française de Cardiologie (SFC,