waist-hip ratio (WHR), were associated with increased risks of PCa. To further explore this relationship and given the accumulating evidence between BMI and smoking in cancer risk, we conducted further analyses taking into account smoking status within the EPICAP study.

Methods EPICAP is a French population-based case-control study that enrolled 819 incident cases of PCa diagnosed in 2012 and 2013, aged less than 75 years old and residing in the département of Hérault, France. Controls were 879 age-matched individuals living in the same geographic area. Face to face interviews, using a standardized computerized questionnaire, gathered information about socio-demographic characteristics, personal medical history, lifestyle factors, physical activity, residential and occupational history. Anthropometric indicators have also been collected through the questionnaire (self-report of height at 18 years old and weight every decade) or anthropometric measures at time of interview (height, weight, waist and hip circumferences). Logistic regression models were used to assess odds ratios (ORs) for the associations between anthropometric indicators (BMI, WC, WHR) and PCa risk. Analyses were adjusted for age, family history of PCa and ethnicity. Stratified analyses were conducted by PCa aggressiveness according to the Gleason score. Seeking for relevant interaction between smoking status and BMI trajectories and given that smoking is a major risk factor for many types of cancer, known to decrease obesity, we performed stratified analyses according to smoking status.

Results Overall, 28.6% were never smokers, 54.9% former smokers, and 16.5% current smokers, similarly distributed between cases and controls (p=0.21). Among never smokers, we observed a slight but non-significant increased risk of overall PCa for men with a BMI above 25 kg/m² (OR 1.52 [0.97–2.38]) as well as for men with a WC greater to 94 cm (OR 1.42 [0.93–2.16]) or a WHR greater or equal to 0.95 (OR 1.40 [0.92–2.13]). Among current smokers, we observed no association between BMI, WC or WHR and PCa risk (OR 1.15 [0.62–2.13], OR 1.24 [0.68–2.30], OR 1.06 [0.58–1.93], respectively). However interaction was not significant.

Conclusion Our results showed that associations between anthropometric indicators were more pronounced among never smokers, in agreement with the assumption that smoking may attenuate the association between obesity and cancer.