

# Hypercoagulable overall haemostatic potential is not intrinsically associated with PCOS but worsens with increasing BMI



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## OBJECTIVES

Growing evidences imply a role of coagulation system in the development of thromboembolic events and progression of atherosclerosis in PCOS. The aim of the study was to identify potential relationship of overall haemostatic potential (OHP) with a syndrome per se, BMI and androgens. OHP has not yet been assessed in PCOS.

## METHODS

In 89 women with PCOS (50 obese, 13 overweight and 27 normal weight) and 21 healthy women (11 obese and 10 normal weight) OHP with overall coagulation potential (OCP) and overall fibrinolytic potential (OFP) as supplementary parameters was determined spectrophotometrically by repeated fibrin formation and degradation registration in two parallel plasma samples. To the first sample thrombin was added (OCP) and to the second sample both thrombin and tissue-type plasminogen activator (OHP) were added. OFP was calculated as  $[(OCP-OHP)/OCP] \times 100$  (%). Concentration of free testosterone, DHEAS and androstendione was also assessed in PCOS women.

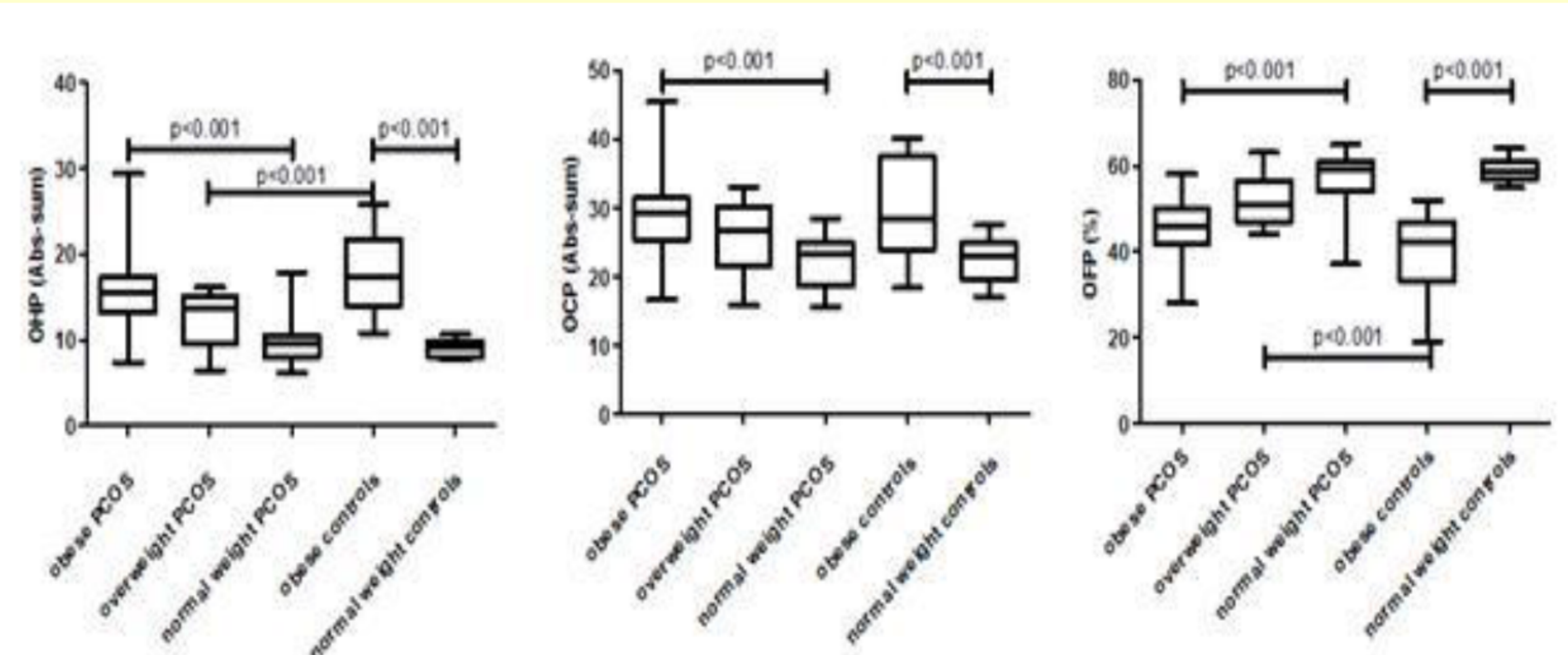
## RESULTS

OHP increased with BMI in PCOS ( $15.5 \pm 3.8$  in obese,  $12.5 \pm 5.1$  in overweight and  $9.6 \pm 2.3$  Abs-sum in normal weight) and in controls ( $17.3 \pm 4.6$  in obese and  $9.1 \pm 1.0$  in normal weight). There was significant difference between obese and normal weight PCOS ( $p < 0.001$ ) and between obese and normal weight controls ( $p < 0.001$ ). OCP also increased with BMI in PCOS ( $28.5 \pm 5.2$  in obese vs.  $25.7 \pm 5.2$  in overweight vs.  $22.6 \pm 3.9$  Abs-sum in normal weight;  $p < 0.001$  for obese vs. normal weight) and in controls ( $29.0 \pm 7.1$  in obese vs.  $22.3 \pm 3.4$  Abs-sum in normal weight,  $p < 0.001$ ). OFP decreased with BMI in PCOS ( $46 \pm 6$  in obese,  $52 \pm 6$  in overweight and  $57 \pm 6\%$  in normal weight;  $p < 0.001$ ) and in controls ( $40 \pm 10$  in obese and  $59 \pm 3\%$  in normal;  $p < 0.001$ ). OHP in healthy obese and PCOS obese did not differ significantly, while OHP for healthy obese was increased and OFP reduced in comparison to overweight and normal weight PCOS ( $p < 0.001$ ). Androgens did not affect OHP, OCP and OFP.

Table 1: OHP, OCP and OFP values in women with PCOS and healthy women (average  $\pm$  SD).

	OHP (Abs-sum)	OCP (abs-sum)	OFP (%)
Obese PCOS	$15.5 \pm 3.8^*$	$28.5 \pm 5.2^*$	$46 \pm 6^*$
Overweight PCOS	$12.5 \pm 5.1$	$25.7 \pm 5.2$	$52 \pm 6$
Normal weight PCOS	$9.6 \pm 2.3$	$22.6 \pm 3.9$	$57 \pm 6$
Obese control	$17.3 \pm 4.6^*$	$29.0 \pm 7.1^*$	$40 \pm 10^*$
Normal weight control	$9.1 \pm 1.0$	$22.3 \pm 3.4$	$59 \pm 3$
ANOVA	$< 0.001$	$< 0.001$	$< 0.001$

\* Scheffe's post-hoc p compared to normal weight PCOS



Picture 1: OHP, OCP and OFP values in women with PCOS and healthy women.

## CONCLUSIONS

PCOS was not associated with increased OHP when compared with BMI and age matched controls. However, increase in OHP was positively associated with BMI in PCOS and healthy women.

