SALIVARY SEX STEROIDS AS MARKERS OF PUBERTY IN BOYS DURING LATE CHILDHOOD AND ADOLESCENCE

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INTRODUCTION

Salivary androgens represent a non-invasive marker of puberty that may have utility in population studies as well as in the clinical arena

AIM

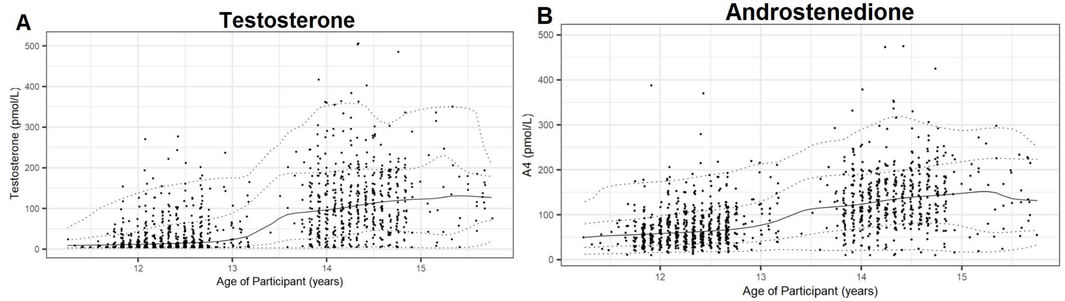
To understand age and sex related variation in salivary androgens using LC-MS/MS and demonstrate the correlations between salivary androgens and pubertal development in boys

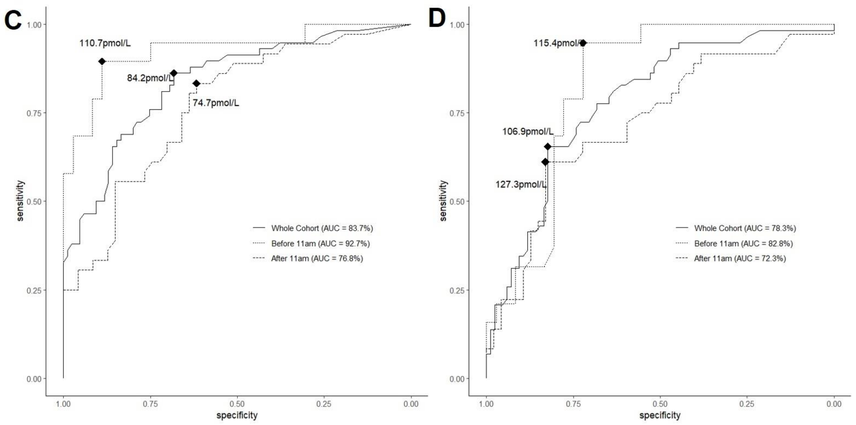
METHOD

- 1,166 saliva samples were available from 929 boys aged between 11-16 yrs at two time points approximately 2 years apart from school-based adolescent cohort study[1]
- Five androgens (T, A4, 17-OHP, 11-KT and 11-OHA4 were analyzed in saliva samples using LC-MS/MS
- Self-reported assessment of puberty through the Pubertal Development Scale (PDS) was also collected at both time points

RESULTS

- All salivary androgens exhibited an increasing trend by an advancing age (ANOVA, $p < .001$) (Figure A, B)
- Salivary T concentrations revealed the highest correlation with age ($r=0.55$, $p < .001$)
- In a subgroup analysis of 147 saliva samples that were collected within 90 days before or after PDS, salivary T showed the highest correlation with composite PDS score & self-reported voice-breaking on PDS ($r=0.75$, $r=0.67$, respectively)
- The capacity of salivary of salivary T and A4 to predict major voice change (score ≥ 3) on PDS self-report with AUC of 0.84 and 0.78, respectively
- ROC curve analysis showed that a salivary T of 84.2 pmol/L and a salivary A4 of 106.9 pmol/l provided a sensitivity of 76% and 71%, respectively and a specificity of 74% and 74%, respectively to predict notable voice change on PDS self-report (Figure C, D)
- Salivary T concentrations revealed the highest linear correlation with salivary A4 ($r= 0.75$; $p < 0.01$)





CONCLUSIONS

- In boys aged 11-16yrs, an increase in salivary T and A4 is associated with self-reported pubertal progress including voice change
- These two biochemical markers represent valid non-invasive biomarkers of puberty in population studies

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