Endocrine and reproductive outcome of men born with various degrees of hypospadias

L. Tack, A. Springer, A. Mahmoud, K. Tilleman, S. Riedl, U. Tonnhofer, M. Hiess, J. Weninger, E. Van Laecke, P. Hoebeke, AF Spinoit and M. Cools

UZ GENT – UNIVERSITEIT GENT

MEDICAL UNIVERSITY OF VIENNA

Key messages

- 20% of hypospadias cases have reduced semen quality
- No difference in testosterone and LH levels was found between hypospadias cases and controls
- FSH and Inhibin B levels are not very reliable in predicting low sperm counts

INTRODUCTION

Background: Limited, small-scale studies have revealed that men with proximal hypospadias or with other signs of undermasculinisation (i.e. complex hypospadias) are at risk of reduced fertility and/or impaired testicular hormone synthesis. However, the extent of this phenomenon and if milder forms of isolated hypospadias are also affected, remains unclear.

Aims: To explore reproductive hormones and semen quality of young men (16-21 years old) born with all forms of non-syndromic hypospadias in comparison to healthy controls.

METHODOLOGY

Design: Cross-sectional assessment

Centers: Ghent University Hospital and Wien Medical University

Tests: Blood sampling between 8:00 and 9:00 AM for total and free testosterone, LH, FSH and Inhibin B. Spermiogram on two independent semen samples, according to the WHO 2010 criteria.

Statistics: IBM SPSS© 25.0 using an unpaired Student t-test or Mann Whitney-U test as appropriate.

PARTICIPANTS

Hypospadias	N= 192
Distal	132/192 (68,8%)
Midshaft	37/192 (19,3%)
Proximal	23/192 (12,0%)
Complex	20/192 (10,4%)
Controls	N=50

RESULTS

Spermiograms

Samples:

- Two semen samples: 83,9% and 93,8% of cases and controls, respectively

Results:

- Azoospermia in 7 (4,1%) cases
- Oligozoospermia in 25 (14,7%) cases and 2 (4%) controls
- Normal spermiogram: 86/170 (50,6%) cases; 30/50 (60%) controls
  - In controls, mild astheno- and teratozoospermia were the most common causes of abnormalities

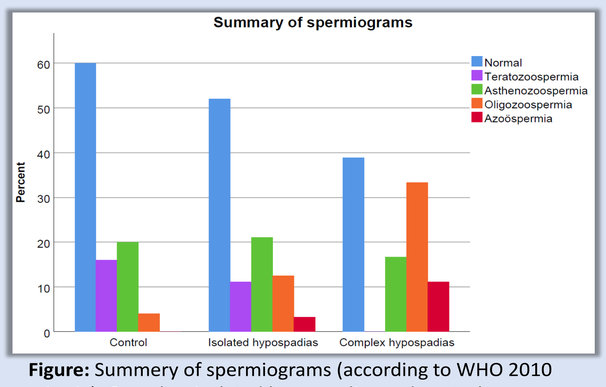


Figure: Summery of spermiograms (according to WHO 2010 criteria). Complex, isolated hypospadias and controls.

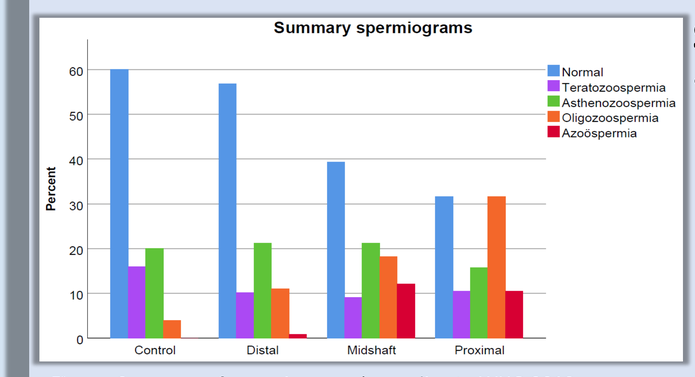


Figure: Summery of spermiograms (according to WHO 2010 criteria). Proximal, midshaft, distal hypospadias and controls.

Spermatogenesis:

- Lower semen concentrations in proximal and complex hypospadias in comparison to controls (p=0,011 and <0,001, respectively)

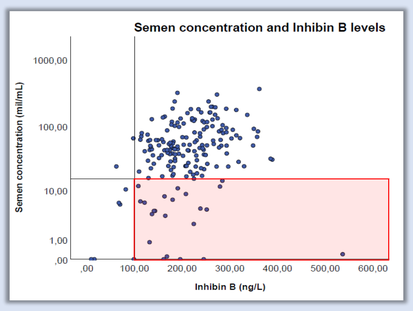
Hormone levels

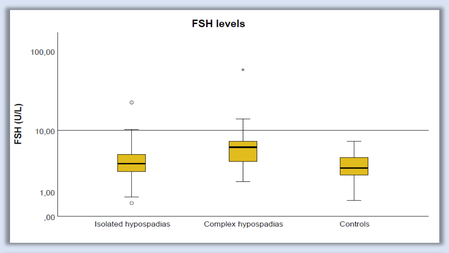
Androgens:

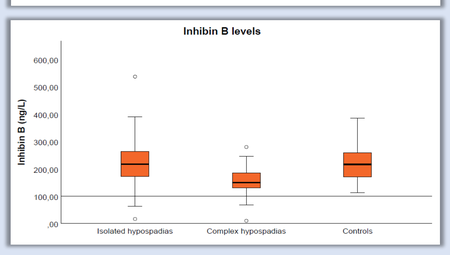
- Free / total testosterone & DHT levels
  - No differences:
    - Proximal / Distal / Controls
    - Complex / Isolated / Controls

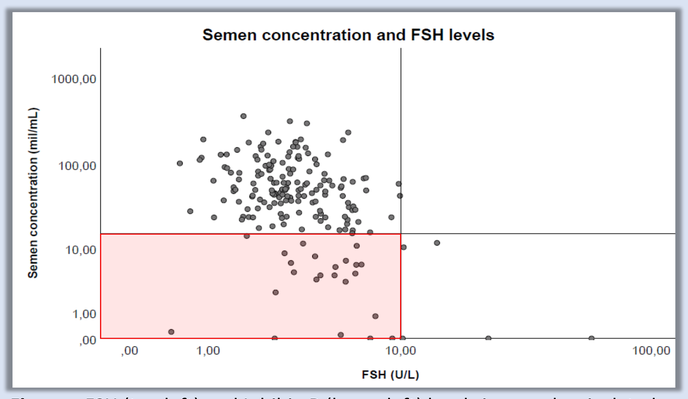
Sertoli cell function:

- Higher FSH levels in complex hypospadias
  - Isolated hypospadias (p=0,011); Controls (p=0,005)
- Lower inhibin B levels in complex hypospadias
  - Isolated hypospadias (p=0,001); Controls (p=0,008)
- Both FSH and LH were poor predictors of oligo/azoöspermia









Figures: FSH (top left) and Inhibin B (lower left) levels in complex, isolated hypospadias and controls. Inhibin B levels (top right) and FSH levels (lower right) and semen concentration. Red area marking oligo/azoöspermia with normal hormone levels.

CONCLUSION

In our cohort, over 20% of men born with hypospadias have reduced semen quality. Over 40% of complex and proximal hypospadias have oligo-/azoospermia as compared to 11,9% and 15,8% of distal and isolated hypospadias, respectively. There is no difference in testosterone or LH levels between hypospadias cases and controls. FSH and Inhibin B levels are not always predictive of a low sperm count.

Funding

BELGISCHE VERENIGING VOOR KINDERGENEESKUNDE
SOCIÉTÉ BELGE DE PÉDIATRIE
BESPEED
fwo
ESPE European Society for Paediatric Endocrinology

Ghent University Hospital, Department: Pediatric Endocrinology & Diabetology (3K12D), Ghent University, BELGIUM – Contact: lloyd.tack@ugent.be, Martine.Cools@ugent.be

58ESPE P1-271

Sex differentiation, gonads and gynaecology or sex endocrinology

Lloyd Tack

Poster presented at: ESPE 2019 VIENNA

PosterSessionOnline.com