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## UROLOGICAL DYSFUNCTIONS IN YOUNG WOMEN." IS IT AN INHERITANCE OF CHILDHOOD?"

### Hypothesis / aims of study

One of the most interesting area of research in urology is the correlation between childhood and adult lower urinary tract symptoms (LUTS). Few studies investigated this topic and the main trial included women with a mean age of  $56 \pm 9$  years (1). The aim of our study is to evaluate in women under 40 years, an age group never examined in literature, if the lower urinary tract dysfunctions (LUTD) may be the result of previous urinary pediatric dysfunctions. These results may identify the "risk conditions" that, if treated properly in early childhood, could help avoiding debilitating diseases that manifest themselves in adults and possibly they may implement a prevention strategy. This study will present the global results and the relation among urinary incontinence (UI), voiding symptoms (VS), storage symptoms (SS) and urinary tract infections (UTIs) in childhood and adulthood.

### Study design, materials and methods

This is a multicenter prospective case-control study conducted in 9 Italian urological clinics from April 2013 to January 2015, approved by ethical committee and registered on the ClinicalTrials.gov. 194 female patients were enrolled and they included 94 healthy voluntary women as control group (group A) and 100 outpatient women (group B), which referred to urological department. Inclusion criteria were: women with age between 18 and 40 years, affected by any LUTS. Exclusion criteria were: diabetes mellitus, neurological disease, neurogenic voiding dysfunction, pelvic inflammatory disease, previous traumatic brain or spinal cord injury, vaginal delivery  $\geq 2$  and baby with birth weight  $\geq 4$  kg, drugs assumption (antihypertensive, diuretic, heroin, cocaine and methadone). All the women completed a self-administered 77-items questionnaire in accordance with the guidelines of the International Children's Continence Society. The questionnaire consists of two parts: the first one explores the female urological and bowel history until age 14, in order to evaluate any symptoms and dysfunctions of childhood; the second part refers to the current urological, bowel, and sexual history, in order to evaluate any adulthood symptoms and dysfunctions. Written informed consent was obtained from all patients. All the data were collected and recorded in a central database. Statistical analysis was performed by using the non parametric Mann-Whitney U test was used for analysis of continuous variables and the categorical data were analyzed by using X<sup>2</sup> test. All calculations were performed using IBM-SPSS® version 22.0 (IBM Corp., Armonk, NY, USA, 2013). A two-sided p-value  $<0.05$  was considered significant..

### Results

194 women, 100 in the group B and 94 in the control group A, were enrolled, median age was 32 years (range 18-40), both groups are comparable in terms of age ( $30.1 \pm 5.2$  vs  $31.6 \pm 7$  years), body mass index, education level ( $p=ns$ ). Fig. 1 (a, b, c) shows the percentage of symptoms present in the total group and in groups A and B. Fig. 2 (a, b, c) shows that the LUTD more frequently present in the childhood is UTI (9.7%). The childhood-adulthood correlation showed that 53.9% of women that were incontinent in the childhood will be incontinent during the adulthood (42.8% stress UI, 14.2% urgency UI and 42.8% mixed UI). Only 23.5% of the women continent in the childhood will be incontinent in the adulthood (41% SUI, 28.2% UUI and mixed UI 30.8%) ( $p<0.001$ ). No evidence of correlation between nocturnal enuresis and urinary incontinence in the adulthood emerged in the analysis. Increased urinary frequency during the childhood seems to be related to voiding symptoms in the adulthood (87.5% for patients with more than 7 daytime voids vs 33.9% for patients with less than 4 daytime voids;  $p<0.001$ ). In the children with urinary frequency emerged also that 62.5% will have frequency disturbances in the adulthood. Adult urgency symptoms do not seem correlate with childhood enuresis and urgency. Voiding symptoms in childhood are correlated to adult VS with 71.4% of the children with VS who will present VS in the adulthood ( $p<0.001$ ), in particular 65% of the children with interrupted flow will develop a voiding dysfunction in the adult and 44.6% of the children who voided with straining will develop VS in the adult. 69.2% of the women with UTIs in childhood presented UTI in the adulthood ( $p=0.028$ ), otherwise 100% of women that had asymptomatic bacteriuria in the childhood will not present recurrent UTI during the adulthood. Moreover 72.7% of patients that had recurrent UTI in the childhood will have the same problem during the adulthood compared to 51.2% that had only a single UTI episode during the childhood ( $p=0.005$ ).

### Interpretation of results

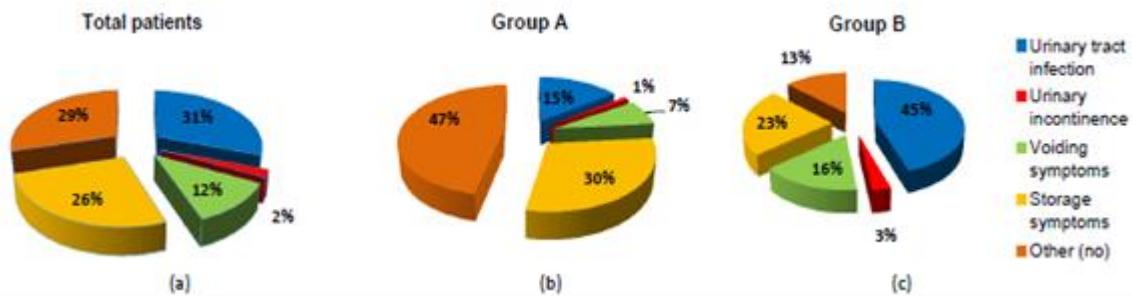
In literature prior studies have identified an association between childhood urinary tract disorders and subsequent adult lower urinary tract symptoms in women with mean age  $56 \pm 9$  years (1). In the entire group of women our study showed that, the most frequent problem is the recurrent UTI followed by the storage symptoms and voiding symptoms. In the healthy group the presence of storage symptoms (urgency and/or frequency) is however present (30 % of the cases), showing how the perception of this problem can be completely different from patient and patient. An important correlation emerged in the incontinent women because 53.9% of the incontinent female children will present this problem in the adult life and this can be considered an important risk factor. Adulthood voiding symptoms are significantly related to the presence of the same problems during the childhood,

furthermore an important correlation emerged between childhood and adulthood UTIs that can confirm an anatomical or major susceptibility to UTI in female gender.

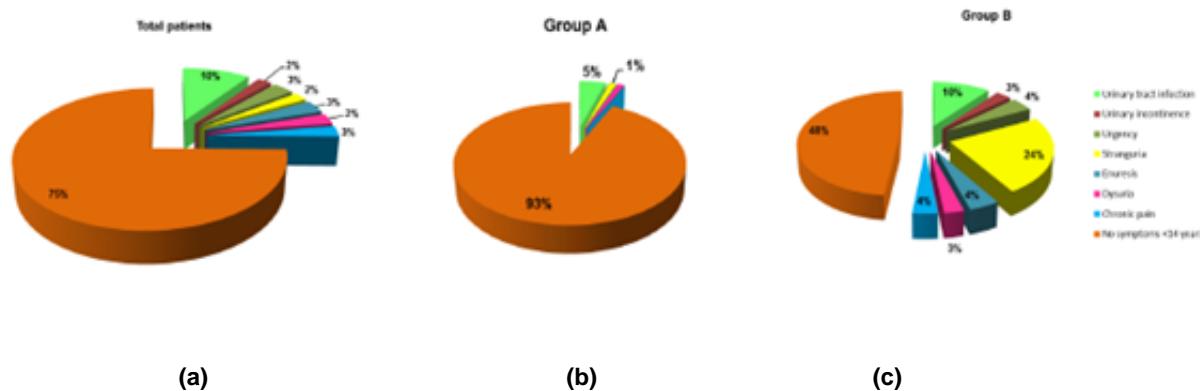
#### Concluding message

Urological dysfunctions during childhood are correlated with urinary dysfunctions in adulthood. Female children with UTIs, UI and VS should be carefully studied to identify treatment or prevention strategy that could avoid further problems in the adulthood. Finally the study confirms the need of a strict collaboration between paediatrics and urologists.

**Figure 1. The percentage of symptoms present in the adulthood in the total patients (a), group A (b) and group B (c)**



**Figure 2. The percentage of symptoms present in the childhood ( $\leq 14$  years) in the total patients (a), group A (b) and group B (c)**



#### References

- Fitzgerald MP, Thom DH, Wessel-Fry C, et al. Reproductive Risks for Incontinence Study at Kaiser Research Group. Childhood urinary symptoms predict adult overactive bladder symptoms. J Urol. 2006; 175 (3 Pt 1): 989-93

#### Disclosures

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