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# INITIAL REPORT ON BETA 3 ADRENOCEPTOR EXPRESSION IN THE HUMAN FEMALE URETHRA

Hypothesis / aims of study

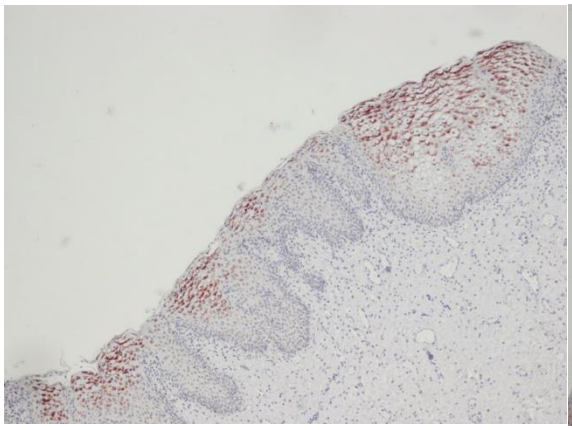
In this initial report we report the results of a histological study to the presence of (ADRB3) in a human female urethra. The presence of ADRB3 in the human urethra has not been reported to date. Presence of ADRB3 within the urethra could have consequences in pharmacotherapy for overactive bladder symptoms (OAB), especially considering urethral instability.

Study design, materials and methods

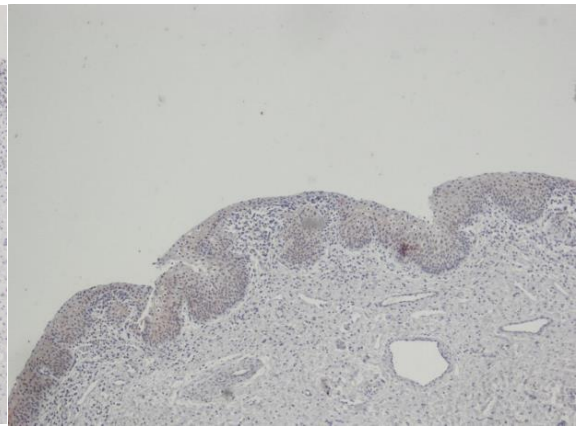
In the first series, a female human bladder, bladder neck, urethra and meatus were obtained from necroscopy relatively short after decease and frozen in OCT and stored at -80C. A 5 µM sections were cut and stained for ADRB3 using two antibodies: LSA4198 and sc-1472 directed against the N- and C-terminus of human ADRB3, respectively. Secondly, a bladder, bladder neck and mid-urethra were obtained from radical cystectomy of a female patient. Half of the tissue was embedded in optimal cutting temperature compound (OCT) and stored at -80ºC or directly fixed in 4% paraformealdehyde overnight and processed for paraffin-embedding

Results

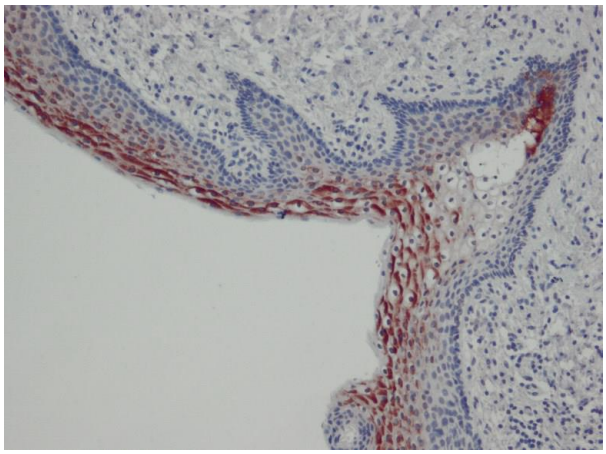
In all tissues examined ADRB3 was expressed in blood vessels. High ADRB3 expression was observed in the bladder and meatus, particularly in the umbrella cells. ADRB3 expression was also observed in mid-urethra. demonstrated.



**Beta3-AR (LS-A4198) – mid urethra**



**Beta3-AR (sc-1472) – mid urethra**



**Beta3-AR (LS-A4198)- bladder neck**

Interpretation of results

Recently, a beta 3 adrenoceptor (ADRB3) agonist has been approved for treatment of over active bladder symptoms (OAB) and has demonstrated significant efficacy in the treatment of OAB. The ADRB3 agonist increases bladder capacity by enhancing bladder relaxation in the storage phase. Theoretically, it may also stimulate the urethra to maintain closure-contraction. This might stabilize the urethral pressure and therefore be a reason for the reduction of OAB in patients with urethral instability.

Concluding message

This is the first histological study that demonstrates the presence of ADRB3 in the human female urethra. Given this conclusion, pharmacotherapy with ADRB3 agonist for overactive bladder symptoms will also have an effect on (pressure) kinetics within the urethra. To establish and measure this effect, prospective urodynamic research is needed.

Disclosures

**Funding:** Unrestricted research Grant Astellas **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** Anonymous tissue examination after necroscopy and radical cystectomy with patients consent **Helsinki:** Yes **Informed Consent:** Yes