

MICRORNAS AS POTENTIAL BIOMARKERS TO PREDICT RISK OF URINARY RETENTION FOLLOWING INTRADETRUSOR ONABOTULINUMTOXIN-A INJECTION

Hypothesis / aims of study

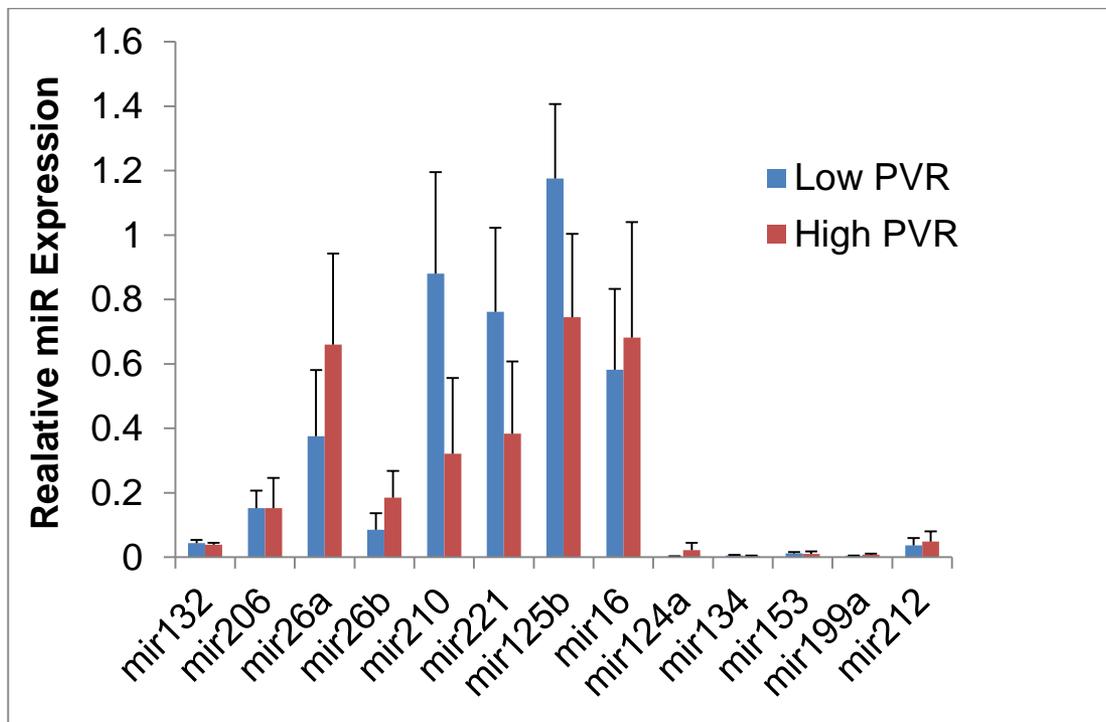
Recent research has highlighted the role of microRNAs (miRs) in the progression of chronic diseases. These miRs represent a new level of gene expression control. The role of miRs in overactive bladder (OAB) is unknown. We studied miR expression in OAB patients injected with intradetrusor onabotulinumtoxin-A (BoNT-A), and we compared patients who developed elevated post-void residual volumes (PVRs) >200ml to those who maintained normal PVRs.

Study design, materials and methods

13 female OAB patients aged 45-80 (Mean 66.2) with urge urinary incontinence refractory to at least two anticholinergics were consented for this IRB-approved study. The baseline PVR was 0-72 ml. Cystoscopic-guided punch bladder biopsy was obtained at the time of injection of 100U BoNT-A. The expression for 13 miR species known for their effect on neurotrophin expression and smooth muscle function was measured by qPCR and normalized to the expression of U6 small nuclear endogenous gene. PVRs were measured by ultrasound at the three week follow-up visit.

Results

Seven patients had PVRs < 200mL (Range 0 – 88mL, Mean 34.71mL) after BoNT-A treatment, and these patients comprised the low PVR group. The other 6 patients had PVRs > 200mL (Range 213 – 518mL, Mean 331mL) after BoNT-A treatment, and these patients formed the high PVR group. There were no age differences between the two groups. We noted differential expression of 5 miRs between the two groups, specifically miR26a, miR36b, miR125b, miR210 and miR221. The high PVR group showed a 2-fold upregulation of miR26a (p=0.06) together with a 2-fold downregulation of miR210, miR125b, and miR221.



Interpretation of results

The higher expression of miR-210, a neuroprotective mediator against ischemia, was associated with normal PVR after BoNT-A injection. Increased miR26a expression, associated with smooth muscle stretching, was associated with high PVR, and this increase could predispose OAB patients to an increased risk of urinary retention after BoNT-A.

Concluding message

This study suggests that determining miR expression prior to BoNT-A treatment in OAB patients might help to determine which patients are at risk of developing urinary retention following therapy.

Disclosures

Funding: Internal funding provided by the Department of Urology University of Pittsburgh **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** University of Pittsburgh Institutional Review Board **Helsinki:** Yes **Informed Consent:** Yes