

CHANGES OF ANGIOGENESIS GROWTH FACTORS IN LONG TERM BLADDER OUTLET OBSTRUCTION INDUCED BLADDER DYSFUNCTION OF RATS

Hypothesis / aims of study

Angiogenesis refers to the formation of capillaries from pre-existing vessels in the organism. If angiogenesis cannot catch up with the speed of hypoxia by long term bladder outlet obstruction (BOO), bladder ischemia may be induced. Vascular endothelial growth factor (VEGF) is a major growth factor that directly participates in angiogenesis. Recently, enhanced angiogenesis of bladder as early response to BOO for the adaptation to the new metabolic status was demonstrated. Therefore, we designed this study to investigate changes of angiogenesis growth factors expression of the bladder dysfunction in long term BOO induced bladder dysfunction of rats

Study design, materials and methods

Six weeks old female Sprague-Dawley rats (n=30) were divided into 3 groups, 10 rats each, group 1: control, group 2: sham operation, group 3: BOO. One (early) and eight weeks (late) after the onset of BOO, cystometric evaluation was performed and bladder tissues were processed. Real-time PCR detection was performed and the expression of angiogenesis growth factors including VEGF, collagen and TGF- β 1 of bladders was evaluated. The mean percent collagen area of the bladder was examined according to the formula, collagen/collagen + muscle.

Results

Bladder dysfunction in late BOO of rats showing decreased inter-contraction interval, maximal voiding pressure was found in late BOO (P<0.05). The expression of collagen and TGF- β 1 increased in late BOO. Increased angiogenesis of bladder as early response to BOO was demonstrated. VEGFR decreased in bladder dysfunction of late BOO that meant the reduced angiogenesis of bladder as late response to BOO.

Interpretation of results

Angiogenesis growth factors increase in the bladder as early response, but reversed to decrease as late response for BOO. This may be the cause of the bladder ischemia and fibrosis induced by the long term BOO.

Concluding message

Supplement of angiogenesis growth factors could offer a novel therapeutic option in the treatment of bladder dysfunction.

Disclosures

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