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Purpose: Since there is no effective tumor marker for human renal cell carcinoma (RCC), searching for novel markers for detection and followup has clinical implications. Recent studies showed that some specific chemokines may affect angiogenesis, growth, and metastasis of RCC. However, the expression and role of CXCL14 (BRAK) in RCC were largely unknown. In this study, we studied the expression and potential role of CXCL14 (BRAK) in human RCC.
Materials and Methods: CXCL14 (BRAK) expression was determined by RT-PCR and real-time PCR in 5 RCC cell lines, and by immunohistochemistry (IHC) in 64 pairs of RCC and adjacent normal tissues. Migration assay was done by migration chamber and Western blotting in 4 RCC cell lines.
Results: RT-PCR and real-time PCR revealed that CXCL14 (BRAK) expression was significantly increased in 4 RCC than in non-tumor (HK-2) cell lines ($P < 0.001$). IHC study also showed that CXCL14 (BRAK) expression was significantly higher in RCC than in normal tissues ($P < 0.001$). In histological classification, CXCL14 (BRAK) expression was significantly higher in conventional RCC than in non-conventional RCC tissues ($P = 0.03$). However, CXCL14 (BRAK) expression was not statistically associated with sex, nuclear grading, or TNM stage. In the migration assay, it was found that CXCL14 (BRAK) up-regulation was associated with the migration ability of 786-O cells in a dose-dependent manner.
Conclusion: CXCL14 (BRAK) up-regulation may be involved in the tumorigenesis and migration of human RCC.

IPD28:
IDENTIFYING LONG NON-CODING RNAS INVOLVED IN PROSTATE CANCER RELAPSE: IMPLICATION IN IDENTIFYING NOVEL PROGNOSIS MARKERS

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Purpose: To study important long non-coding RNA (lncRNA) change in neuroendocrine differentiation of prostate cancer.
Materials and Methods: LNCaP cells was treated by hypoxic culture and repressor element-1 silencing transcription factor (REST) knockdown to study neuroendocrine differentiation (NED). Autophagic pathway as well as REST expression were studied in LNCaP and CWR22Rv1 cells. Several important lncRNA was examined in NED prostate cancer by qRT-PCR.
Results: NED in LNCaP was induced by hypoxic culture and knockdown of REST. In addition, autophagy pathway was induced in LNCaP cells. REST expression is inversely related to neuroendocrine differentiation. Among the lncRNA studied, HOTAIR is decreased after NED induction.
Conclusions: NED in prostate cancer is induced by hypoxia and REST knockdown. Autophagy pathway is involved in NED of prostate cancer. Furthermore, HOTAIR is decreased after NED in prostate cancer. The relation of lncRNA including HOTAIR is further studied in human samples.

IPD29:
GENETIC VARIATIONS IN GLUTATHIONE PATHWAY GENES PREDICT CANCER RECURRENCE IN PATIENTS TREATED WITH TRANS-URETHRAL RESECTION AND BACILLUS CALMETTE-GUERIN INSTILLATION FOR NON-MUSCLE INVASIVE BLADDER CANCER

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Purpose: Glutathione (GSH) is an important molecule involved in cell detoxification and antioxidation and may affect cancer development or outcome. We hypothesized that genetic variation in the GSH pathway might influence the clinical outcome of patients who have non-muscle invasive bladder cancer (NMIBC).
Materials and Methods: A total of 114 single nucleotide polymorphisms (SNPs) in 21 GSH pathway genes were genotyped in 414 NMIBC patients treated with trans-urethral resection alone (TUR) and both TUR and intravesical bacillus Calmette-Guérin instillation (BCG) therapy. The effect of each SNP on time to recurrence was estimated using the multivariate Cox proportional hazards model. Cumulative effect and survival tree analyses were performed to determine the joint effect of unfavorable genotypes on bladder cancer prognosis.
Results: Seven SNPs showed significant associations with cancer recurrence in the TUR group and 15 SNPs showed significant associations with recurrence in the BCG group. The most significant SNP in the TUR group was rs3746162 in *GPX4*, whose variant genotype conferred a 5.4-fold increased risk of recurrence when compared to wild type (hazard ratio [HR] = 5.43, 95% confidence interval [CI] = 2.19-13.46), while the most significant SNP in the BCG group was rs7265992 in *GSS* (HR = 3.43, 95% CI = 1.56-7.56). The risk of recurrence increased with the number of unfavorable genotypes in both groups.
Conclusion: Genetic variants in GSH pathway may influence cancer recurrence in NMIBC patients receiving curative treatment.

IPD30:
INTERACTION AND FUNCTION OF UROTHELIUM AND CHITOSAN/ COLLAGEN TUBULAR SCAFFOLD

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Purpose: Most parts of urinary tracts, including renal pelvis, ureter, bladder, and urethra, are covered by urothelial cells. Infection, urolithiasis, malignancy, trauma, and even autoimmune diseases, such as retroperitoneal fibrosis, could cause urothelium deficiency or deficit. Direct repair with autologous tissues, such as foreskin, buccal mucosa, and gastrointestinal tracts might cause some complications due to different physiological properties. Thus, in this study, we focused on cultivated urothelial cells with proper biomaterial scaffold.
Materials and Methods: We successfully cultivated rat and bovine urothelium with good cell viability and expression of the specific differentiation marker, Uroplakin. As for biomaterial selection and comparison, we found collagen type I is a good extracellular matrix, better than collagen IV, for urothelium growth. And PDMS is a good synthetic polymer, better than EVAL 44, PLA, and chitosan, for urothelium growth and differentiation. Total 208 calcium oxalate urolithiasis patients and 105 healthy control subjects were enrolled. We analyzed the single nucleotide polymorphisms of TAP1 and TAP2 gene using the polymerase chain reaction (PCR)-based restriction analysis.
Results: To achieve better cultivation efficiency, we adjusted medium component and medium PH to find the best cultivation circumstances. Best cell adhesion was observed in the group, KSFM with Ca^{2+} supplement than defined KSFM and KSFM without Ca^{2+}. As for medium PH, PH 8 is suitable for bovine urothelium growth on TCPS, and PH 7.2 is suitable for bovine urothelium growth on PDMS.
Conclusions: PDMS if a proper biomaterial for urothelium scaffold. We found that bovine urothelium could maintain good viability and differentiation status on PDMS membrane. We would further fabricate 3D PDMS scaffold, such as tubular PDMS scaffold for more applications in tissue engineering of urothelium.

IPD31:
NEUROPROTECTIVE EFFECTS OF EXENDIN-4IN BRAIN AND BLADDER OF ISCHEMIA-REPERFUSION INJURY

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Purpose: Urinary incontinence is a common sequele of acute hemispheric ischemic stroke. Besides, patients with diabetes mellitus also suffered from lower urinary symptoms (LUTS) including diabetic cystopathy or diabetic bladder dysfunction. In this study, we investigated the protective mechanism of Exendin-4 in form of microsphere (PEx-4) in brain and bladder.
Materials & Methods: We performed animal study with Female Wistar rats by mimicking ischemia and reperfusion injury. Blood pressure of rat was decreased by removing blood from right iliac artery down to 30mmHg and two rat common carotid arteries were separated and pull by string to obstruct blood flow from heart to brain for 10 minutes. PEx-4 was treated 10 minutes before ischemia by intraperitoneal injection. Rat organs were then analyzed via immunohistochemistry, western blotting, T2-weighted MRI and Masson's trichrome methods.
Results: On MRI images, edema region was increased after ischemia-reperfusion and was decreased with the PEx-4 pretreatment in the prefrontal cortex of control and diabetic rat brain. In histological analysis, neuronal shrinkage and vacuolization in rat brain were increased significantly after ischemia-reperfusion and decreased significantly with the PEx-4 pretreatment in both control and diabetic rat. Endoplasmic reticulum (ER) stress associated proteins including pIRE-1, cleaved caspase-12, ATF4, ATF6, CHOP, Pyrotosis associated proteins including IL1-ß, caspase-1, and Apoptosis associated proteins including PARP, cleavage caspase-3 decreased significantly with PEx-4 pretreatment in both control and diabetic rat. Apoptosis marker caspase-3 and pyrotosis marker caspase-1 were up-regulated after ischemia-reperfusion and were down-regulated with pretreatment of PEx-4 in both control and diabetic rat bladder.
Conclusion: PEx-4 was shown to down-regulate stress markers in brain and bladder of rats with ischemia-reperfusion injury and diabetes. Therefore, it could rescue the overactive bladder dysfunction resulted from ischemia-reperfusion injury and diabetes.