



Illustration by Erin Moore

CLINICAL Genitourinary Prostate, Kidney, & Bladder Cancer

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Anna Colomer Gallardo, Luigi Candela, Oscar Buisan Rueda, Roger Freixa Sala, Javier Elias Cañavera, Marco Moschini, Petr Macek, Mostefa Bennamoun, Annick Mombet, Xavier Cathelineau, Juan José Areal Calama, Rafael Sánchez-Salas

Original Studies

- 210** **Utilization and Safety of Ipilimumab Plus Nivolumab in a Real-World Cohort of Metastatic Renal Cell Carcinoma Patients**
Myuran Thanu, Naveen S. Basappa, Sunita Ghosh, Christian K. Kollmannsberger, Daniel Y.C. Heng, Aaron R. Hansen, Jeffery Graham, Denis Soulières, Martin Neil Reaume, Aly-Khan A. Lalani, Vincent Castonguay, Georg A. Bjarnason, François Patenaude, Rodney H. Breau, Frédéric Pouliot, Anil Kapoor, Lori A. Wood
 In a real-world cohort of 195 metastatic renal cell carcinoma (mRCC) patients treated with ipilimumab plus nivolumab, efficacy outcomes, toxicity rates, and tolerance of treatment were determined. Several efficacy measures were similar to previously reported clinical trial data, despite a significant proportion of patients discontinuing treatment early. This multicenter, retrospective analysis illustrates the safety, and efficacy of first-line ipilimumab plus nivolumab in mRCC patients.
- 219** **RNA sequencing in a penile cancer cohort: an investigation of biomarkers of cisplatin resistance and potential therapeutic drug targets**
Christine Ibilibor, Amanda L. Watson, Hanzhang Wang, Gabriela Gonzalez, Sitai Liang, David Alonzo, Ronald Rodriguez
 There are limited innovative drug targets and biomarkers of chemotherapeutic response in penile cancer. In 51 patients, we performed immunohistochemistry staining and next-generation RNA sequencing for ERCC1 and E2F1, biomarkers of cisplatin resistance. We found elevated expression of E2F1 and elevated RNA expression of potential drug targets. Our findings are relevant because these drug targets are currently being developed for clinical use.
- 227** **Neoadjuvant Chemotherapy in Elderly Patients With Upper Tract Urothelial Cancer: Oncologic Outcomes From a Multicenter Study**
Nico C. Grossmann, Benjamin Pradere, David D'Andrea, Victor M. Schuettfort, Keiichiro Mori, Pawel Rajwa, Fahad Qahal, Ekaterina Laukhtina, Satoshi Katayama, Christian D. Fankhauser, Evangelos Xylinas, Vitaly Margulis, Marco Moschini, Mohammad Abufaraj, Marco Bandini, Chiara Lonati, Peter Nyirady, Pierre I. Karakiewicz, Harun Fajkovic, Shahrokh F. Shariat
 This study evaluated elderly patients receiving neoadjuvant chemotherapy for upper tract urothelial carcinoma. Compared with their younger counterparts, cisplatin-eligible elderly patients showed similar pathologic response rates and survival outcomes. Cisplatin-ineligible elderly patients appeared to have lower pathologic response rates and might be therefore more likely to benefit from immediate radical nephroureterectomy.

- 237 Hereditary Cancer Gene Variants in Hispanic Men With a Personal or Family History of Prostate Cancer**
Chethan Ramamurthy, Eric W. Stutz, Martin Goros, Jonathan Gelfond, Teresa L. Johnson-Pais, Ian M. Thompson, Robin J. Leach, Michael A. Liss
We investigate germline genetic mutations for prostate cancer (PCa) in Hispanic men enrolled in the SABOR cohort. From 1515 men, we identified 263 with a diagnosis of PCa or a first-degree family history. We discovered a 3.8% mutation rate with 70 variants of undetermined significance, which encourages testing of Hispanic men, and building ethnically diverse genetic references.
- 244 Association Between Perioperative Chemotherapy and Survival in Men Undergoing Radical Resection for Primary Urethral Urothelial Carcinoma: An Analysis of the National Cancer Database**
Kenan Celtik, Kelvin Lim, Furkan Dursun, Jiaqiong Xu, Zachary Klaassen, Jun Zhang, Eleni Efsthathiou, Guru Sonpavde, Christopher Wallis, Raj Satkunasivam
We examined the survival benefit of perioperative chemotherapy in men treated with radical surgery for primary urethral urothelial carcinoma (UUC). 191 men with UCC were identified within the National Cancer Database. We demonstrated that neoadjuvant chemotherapy was associated with improved survival compared to no chemotherapy or adjuvant chemotherapy.
- 252 Coordinated Pembrolizumab and High Dose IL-2 (5-in-a-Row Schedule) for Therapy of Metastatic Clear Cell Renal Cancer**
Jonathan Chazkel, Michael J. Schell, Jad Chahoud, Jingsong Zhang, Rohit Jain, Jennifer Swank, Steve Ludlow, Kristina Lombardi, Yesenia Lucas, Cortlin Croft, Jennifer Rembisz, Gigi Jameel, Mayer Fishman
Pharmacologic ligation of the interleukin-2 receptor and immune checkpoint blockade may change lymphocytes to induce regression of various cancers. This study addressed the safety and feasibility of the combination of interleukin-2 and pembrolizumab in the treatment of metastatic clear cell renal cancer. Nineteen out of twenty-seven patients had partial or complete responses. No accrual stops for safety were triggered.
- 260 Chronic Use of Proton Pump Inhibitors Is Associated With an Increased Risk of Immune Checkpoint Inhibitor Colitis in Renal Cell Carcinoma**
Jianyi Yin, Roy Elias, Lan Peng, Nicholas Levonyak, Annapoorani Asokan, Alana Christie, Nisa Kubiliun, James Brugarolas, Hans J. Hammers
This retrospective study sought to evaluate the relationship between proton pump inhibitor (PPI) and immune checkpoint inhibitor (ICI) colitis in patients with metastatic renal cell carcinoma (mRCC). We found chronic PPI use <8 weeks as a potential risk factor of ICI colitis. Our finding suggests an actionable approach towards reducing the incidence of ICI colitis.
- 270 Automated Bone Scan Index to Optimize Prostate Cancer Working Group Radiographic Progression Criteria for Men With Metastatic Castration-Resistant Prostate Cancer**
Aseem Anand, Glenn Heller, Joseph Fox, Daniel C. Danila, Anders Bjartell, Lars Edenbrandt, Steven M. Larson, Howard I. Scher, Michael J. Morris
The study sought to quantify the total increase in tumor burden represented by prostate cancer working group progression criteria, and to determine the interval increase that best associates with overall survival. An absolute increase of 0.6 in aBSI from the first follow-up scan results in the highest association with survival in patients with metastatic castration resistant prostate cancer.
- 278 Comprehensive genomic profiling of treatment resistant metastatic castrate sensitive prostate cancer reveals high frequency of potential therapeutic targets**
Coralea Kappel, Di Maria Jiang, Bryan Wong, Tong Zhang, Shamini Selvarajah, Evan Warner, Aaron R. Hansen, Nazanin Fallah-Rad, Adrian G. Sacher, Tracy L. Stockley, Philippe L. Bedard, Srikala S. Sridhar
In this cohort of patients with clinically highly treatment resistant metastatic castrate sensitive prostate cancer, comprehensive genomic profiling was feasible using archival tissue and about one third of patients harbored de novo AR, DDR pathogenic and/or likely pathogenic variant prior to initiating ADT. This is a small cohort but represents patients that were likely not well represented in landmark clinical trials and are important to characterize.

285 Nivolumab VERSUS Cabozantinib as Second-Line Therapy in Patients With Advanced Renal Cell Carcinoma: A Real-World Comparison

Matteo Santoni, Gaetano Aurilio, Francesco Massari, Enrique Grande, Marc R Matrana, Mimma Rizzo, Ugo De Giorgi, Lorena Incorvaia, Angelo Martignetti, Javier Molina-Cerrillo, Ignacio Ortego Zabalza, Veronica Mollica, Alessandro Rizzo, Nicola Battelli, Camillo Porta

Tyrosine-kinase inhibitors still represent a first-line option for selected patients with metastatic Renal Cell Carcinoma (mRCC). Our study aimed to compare the real-world efficacy of nivolumab or cabozantinib as second-line therapy in 343 patients with mRCC. We reported significant differences in terms of overall survival and progression-free survival between nivolumab and cabozantinib in specific mRCC subpopulations.

Editor's highlight

296 Factors Associated With Palliative Intervention Utilization for Metastatic Renal Cell Carcinoma

Hiren V. Patel, Sinae Kim, Arnav Srivastava, Brian M. Shinder, Joshua Sterling, Biren Saraiya, Tina M. Mayer, Saum Ghodoussipour, Thomas L. Jang, Eric A. Singer

The use of palliative interventions and the determinants of its use for Stage IV renal cell carcinoma (RCC) are well understood. Using a nationally representative database, we demonstrate that palliative intervention utilization has minimally increased for Stage IV RCC. Several geographic, socioeconomic, and clinical factors predict receipt of palliative interventions among patients with Stage IV RCC in a treatment-specific manner.

297 Impact of ¹⁸ FDG- PET CT in the Management of Muscle Invasive Bladder Cancer

Pauline Bertolaso, Véronique Brouste, Anne-Laure Cazeau, Henri de Clermont-Gallerande, Franck Bladou, Mathilde Cabart, Felix Lefort, Marine Gross-Goupil

We studied diagnosis accuracy of ¹⁸ FDG-PET Computed Tomography (CT) in nodal staging of muscle invasive bladder cancer (MIBC) and the rate of treatment modification according to FDG-PET CT results. FDG-PET CT was more sensitive compared to CT alone for lymph node (LN) staging. Treatment decision were modified for 26% of patient due to FDG-PET CT findings.

298 Patient Perceptions Regarding Routine Oncologic Follow-Up for Urologic Malignancies

Sarah A. Strausser, R. Grant Owens, Tyler Vu, Ellius Kwok, Eric W. Schaefer, Suzanne Boltz, Alireza Aminsharifi, Matthew Kaag, Jay D. Raman, Suzanne B. Merrill

It remains unclear whether oncologic follow-up exacerbates or alleviates patient stress about recurrence of urologic malignancies. We administered surveys examining patient perceptions and expectations of follow-up to 337 patients with kidney, prostate, or bladder cancer presenting at least 60 days after surgery. Across all cancer types, urology patients are overall satisfied and find follow-up with urology providers to be reassuring.

299 Association of Obesity and Diabetes With Prostate Cancer Risk Groups in a Multiethnic Population

Denzel Zhu, Michelle Toker, William Shyr, Ethan Fram, Kara L. Watts, Ilir Agalliu

We examined the independent and combined effects of body mass index /obesity and diabetes mellitus in relation to the NCCN prostate cancer (PCa) risk groups in a racially-diverse cohort of men from an urban medical center. We found that obesity and diabetes were associated with high-risk PCa; however, most of the association was driven by obesity.

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e181 Identification of Different miRNAs and Their Relevant miRNA Targeted Genes Involved in Sister Chromatid Cohesion and Segregation (SCCS)/chromatin Remodeling Pathway on T1G3 Urothelial Carcinoma (UC) Response to BCG Immunotherapy

Amira Awadalla, Mohamed H Zahran, Hassan Abol-Enein, Abdel-Rahman N Zekri, Mohamed Abd Elbaset, Asmaa E Ahmed, Eman T Hamam, Amr Elsayy, Mohamed K Khalifa, Ahmed A Shokeir

Epigenetic explanation of UC to BCG is not well-understood. We studied the impact of different miRNAs and their targeted genes on BCG-response. Higher tumor expression of SCCS (STAG 2) and chromatin remodeling (INCOR1) genes and lower expression of ARID1A and UTX genes were associated with poor response to BCG. This is a step toward optimizing treatment selection in such cases.

- e190 The Role of Prior Bladder Cancer on Recurrence in Patients Treated with Radical Nephroureterectomy**
Alberto Martini, Chiara Lonati, Francesco Montorsi, Alberto Briganti, Renzo Colombo, Andrea Necchi, Claudio Simeone, Stefania Zamboni, Luca Afferi, Agostino Mattei, Roberto Carando, Guillaume Ploussard, Francesco Soria, Giancarlo Marra, Morgan Rouprêt, Evangelos Xylinas, Benjamin Pradere, Mohammad Abufaraj, David D'Andrea, Shahrokh F. Shariat, Marco Moschini
 The prognostic role of prior bladder cancer (BCa) among upper tract urothelial carcinoma (UTUC) patients is still poorly addressed. We retrospectively analyzed a multicenter cohort of 1,580 patients to assess the role of prior BCa on any recurrence after radical nephroureterectomy for UTUC. Our findings show that patients with prior BCa history exhibit a significantly increased risk of any recurrence.
- e199 Parenchymal Mass Loss During Partial Nephrectomy: Role of Devascularized Parenchymal Mass and Excised Parenchymal Mass and Impact on Functional Preservation**
Qi Liu, Ming Gao, Tian X. Lin, Bei Liao, Ya H. Wang, Shao X. Wu, Shi Z. Xu, Jie X. Pan, Zi X. Xu, Jian Huang, Wen Dong
- e205 Single Positive Core Prostate Cancer at Biopsy: Clinicopathological Implications and Risk Factors for Adverse Pathological Outcomes**
Qiqi Mao, Yiwei Lin, Dan Xia, Shuo Wang, Hai Jiang
 It is common for prostate cancer to be diagnosed by one single positive core in prostate biopsy, while the clinical significance remains unclear. In this study, we included 293 patients with single positive core prostate cancer and investigate the final pathological outcomes on radical prostatectomy. The results indicated that the single positive core prostate cancer should not be considered a low-risk disease.
- e210 Modified 5-Item Frailty Index Score as Prognostic Marker After Radical Cystectomy in Bladder Cancer**
Shimpei Yamashita, Nobuyuki Mashima, Masatoshi Higuchi, Nagahide Matsumura, Keizo Hagino, Kazuro Kikkawa, Yasuo Kohjimoto, Isao Hara
 The prognostic value of preoperative modified 5-item frailty index (mFI-5) after radical cystectomy for bladder cancer is currently supported by only limited evidence. In this multicenter retrospective series of 238 patients, high preoperative mFI-5 score was associated with poor overall survival after radical cystectomy, independently from pathologic features of bladder cancer.
- e217 Combining CAPRA-S With Tumor IDC/C Features Improves the Prognostication of Biochemical Recurrence in Prostate Cancer Patients**
Renu Jeyapala, Shivani Kamdar, Ekaterina Olkhov-Mitsel, Alexandre Zlotta, Neil Fleshner, Tapio Visakorpi, Theodorus van der Kwast, Bharati Bapat
 Biomarker panels must remain significantly associated with the outcomes across patient cohorts and add to pre-existing nomograms. We validated the prognostic ability of both IDC/C and CAPRA-S for BCR and time to BCR in over 600 patients (3 cohorts). CAPRA-S and IDC/C was significant in recurrence-free survival and an independent predictor of BCR.
- e227 Assessing Inter-Fraction Changes in The Size and Position of The Penile Bulb During Daily MR-Guided Radiation Therapy to The Prostate Bed: Do We Need to Adjust How We Plan Radiation in The Post-Radical Prostatectomy Setting to Reduce Risk of Erectile Dysfunction?**
Amit Roy, Olga Green, Randall Brenneman, Walter Bosch, Hiram A Gay, Jeff M. Michalski, Brian C. Baumann
- e233 Histologic Growth Patterns in Clear Cell Renal Cell Carcinoma Stratify Patients into Survival Risk Groups**
Deepika Sirohi, Jonathan Chipman, Marc Barry, Daniel Albertson, Jon Mahlow, Ting Liu, Evan Raps, Ben Haaland, Nicolas Sayegh, Haoran Li, Nityam Rathi, Prayushi Sharma, Neeraj Agarwal, Beatrice Knudsen
 The study reports a systematic analysis of histologic growth patterns in clear cell renal cell carcinoma and their impact on predicting overall survival after nephrectomy. Furthermore, we use a combination of co-occurrence of histologic growth patterns, and their risk classification to generate an evolutionary model for disease progression that suggests 2 evolutionary branches which differ in risk of development of metastatic disease.

- e244** **Impact of Multiparametric MRI and PSA Density on the Initial Indication or the Maintaining in Active Surveillance During Follow-Up in low-Risk Prostate Cancer**
Kevin Saout, Audrey Zambon, Truong An Nguyen, Caroline Lucas, Charlotte Payrard-Starck, Tristan Segalen, Valentin Tissot, Laurent Doucet, Julien Marolleau, Charles Deruelle, Vincent Joulin, Alexandre Fourcade, Georges Fournier, Antoine Valeri
We assessed the impact of MRI and PSA density on the probability to pursue an active surveillance of prostate cancer. We found that the use of these characteristics could improve selection of patients at diagnosis, stratifying the delayed treatment risk. During follow-up, some biopsies could be avoided with a reasonably risk and higher MRI lesion were at high-risk of treatment.
- e253** **Albumin-to-Alkaline Phosphatase Ratio as a Novel Prognostic Factor in Patients Undergoing Nephrectomy for Non-Metastatic Renal Cell Carcinoma: Propensity Score Matching Analysis**
Il Won, Sung Ryul Shim, Sun Il Kim, Se Joong Kim, Dae Sung Cho
- e263** **Nomograms for Metastasis-Free and Overall Survival for Pathologically Node Positive Prostate Cancer Patients Treated With or Without Radiation Therapy Plus Short-Term ADT**
Ryan Hutten, Jonathan D. Tward
Node-positive prostate cancer is a difficult clinical scenario without clear guidelines regarding postoperative management. We identified 336 men with node-positive prostate cancer treated at a single center with or without postoperative radiation therapy in order to develop nomograms predictive of metastasis and death. These models can discretely quantify an individual's risk of metastasis or death with and without postprostatectomy radiotherapy.