

P033 Genomic classifiers in personalized prostate cancer radiotherapy approaches – a systematic review and future perspectives based on international consensus

Eur Urol Open Sci 2022;45(Suppl 2):S92

Spohn S.K.B.¹, Draulans C.², Kishan A.U.³, Spratt D.⁴, Ross A.⁵, Maurer T.⁶, Tilki D.⁶, Berlin A.⁷, Blanchard P.⁸, Collins S.⁹, Bronsert P.¹⁰, Chen R.¹¹, Dal Pra A.¹², De Meerler G.², Eade T.¹³, Haustermans K.², Hölscher T.¹⁴, Höcht S.¹⁵, Ghadjar P.¹⁶, Davicioni E.¹⁷, Heck M.¹⁸, Kerkmeijer L.G.¹⁹, Kirste S.¹, Tselis N.²⁰, Tran P.T.²¹, Pinkawa M.²², Pommier P.²³, Deltas C.²⁴, Schmidt-Hegemann N-S.²⁵, Wiegel T.²⁶, Zilli T.²⁷, Tree A.C.²⁸, Qiu X.²⁹, Murthy V.³⁰, Epstein J.I.³¹, Graatzke C.³², Grosu A.L.¹, Kamran S.C.³³, Zamboglou C.¹, Pinkawa

¹University Medical Center Freiburg, Dept. of Radiation Oncology, Freiburg, Germany, ²University Hospitals Leuven, Dept. of Radiation Oncology, Leuven, Belgium, ³University of California, Dept. of Radiation Oncology, Los Angeles, United States of America, ⁴UH Seidman Cancer Center, Dept. of Radiation Oncology, Cleveland, United States of America, ⁵Northwestern Feinberg School of Medicine, Dept. of Urology, Chicago, United States of America, ⁶University Hospital Hamburg-Eppendorf, Martini-Klinik Prostate Cancer Center, Hamburg, Germany, ⁷Temerty Faculty of Medicine, University of Toronto, Dept. of Radiation Oncology, Toronto, Canada, ⁸Gustave Roussy, Dept. of Radiation Oncology, Paris, France, ⁹Medstar Georgetown University Hospital, Dept. of Radiation Medicine, Washington D.C., United States of America, ¹⁰University Medical Center Freiburg, Institute for Surgical Pathology, Freiburg, Germany, ¹¹University of Kansas Cancer Center, Dept. of Radiation Oncology, Kansas City, United States of America, ¹²University of Miami, Miller School of Medicine, Dept. of Radiation Oncology, Miami, United States of America, ¹³Northern Sydney Cancer Centre, Radiation Oncology Unit, Sydney, Australia, ¹⁴Faculty of Medicine and University Hospital Carl Gustav Carus, Technische Universität Dresden, Dept. of Radiation Oncology, Dresden, Germany, ¹⁵Xcare Practices, Dept. of Radiation Oncology, Saarlouis, Germany, ¹⁶Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Dept. of Radiation Oncology, Berlin, Germany, ¹⁷Veracyte, Inc, Veracyte, Inc, San Diego, United States of America, ¹⁸Rechts der Isar Medical Center, Technical University of Munich, Dept. of Urology, Munich, Germany, ¹⁹Radboud University Medical Center, Dept. of Radiation Oncology, Nijmegen, The Netherlands, ²⁰University Hospital Johann Wolfgang Goethe University, Dept. of Radiation Oncology, Frankfurt, Germany, ²¹University of Maryland, Dept. of Radiation Oncology, Maryland, United States of America, ²²MediClin Robert Janker Klinik, Dept. of Radiation Oncology, Bonn, Germany, ²³Centre Léon Bérard, Dept. of Radiation Oncology, Lyon, France, ²⁴Molecular Medicine Research Center and Laboratory of Molecular and Medical Genetics, University of Cyprus, Dept. of Radiation Oncology, Nicosia, Cyprus, ²⁵University Hospital LMU Munich, Dept. of Radiation Oncology, Munich, Germany, ²⁶University Hospital Ulm, Dept. of Radiation Oncology, Ulm, Germany, ²⁷Geneva University Hospital, Dept. of Radiation Oncology, Geneva, Switzerland, ²⁸The Royal Marsden Hospital and the Institute of Cancer Research, Dept. of Radiation Oncology, London, United Kingdom, ²⁹Medical School of Nanjing University, Affiliated Drum Tower Hospital, Dept. of Urology, Nanjing, China, ³⁰ACTREC, Tata Memorial Centre, Homi Bhabha National University, Dept. of Radiation Oncology, Mumbai, India, ³¹Johns Hopkins University School of Medicine, Dept. of Pathology, Baltimore, Germany, ³²University Medical Center Freiburg, Dept. of Urology, Freiburg, Germany, ³³Massachusetts General Hospital, Harvard Medical School, Dept. of Radiation Oncology, Boston, United States of America

Introduction & Objectives: Current risk stratification systems for prostate cancer (PCa) do not sufficiently reflect the diseases heterogeneity and novel prognostic or predictive biomarkers are urgently needed to enhance disease management and treatment decision. Genomic classifiers (GC) enable improved risk stratification after surgery, but less data exists for patients treated with radiotherapy (RT) in the definitive or (oligo)metastatic setting. In order to guide future perspectives of GCs for RT, we conducted (i) a systematic review and (ii) a survey of experts/opinion leaders using a modified DELPHI approach.

Materials & Methods: We performed a systematic review of PubMed/Medline, Embase and Cochrane-Library. Ongoing clinical trials were screened on “clinicaltrials.gov”. Based on these results a multidisciplinary international team of experts received an adapted DELPHI method survey. 31 and 30 experts answered round 1 and round 2, respectively. Questions with $\geq 75\%$ agreement were considered as relevant and included into the qualitative synthesis.

Results: Half of the participating experts reported on using GCs in clinical practice, mostly in extensive metastatic disease (30%) and postoperative settings (27%). Most evidence for GCs exists in the postoperative setting, while data validation of GCs in the definitive RT setting are emerging with promising results in terms of prediction of distant metastases and biochemical recurrence (Figure 1). Despite GCs being rarely used in clinical practice in the management of PCa patients treated with RT, expert consensus demonstrates that GCs are promising tools to improve risk stratification and guide treatment decisions in terms of RT field definition and treatment intensification/de-intensification in various disease stages. Experts consensus revealed “strategies to cope with intertumoral heterogeneity”, “alteration in androgen signaling and “decision making for physicians” as relevant translational research fields to be addresses by incorporating GCs.

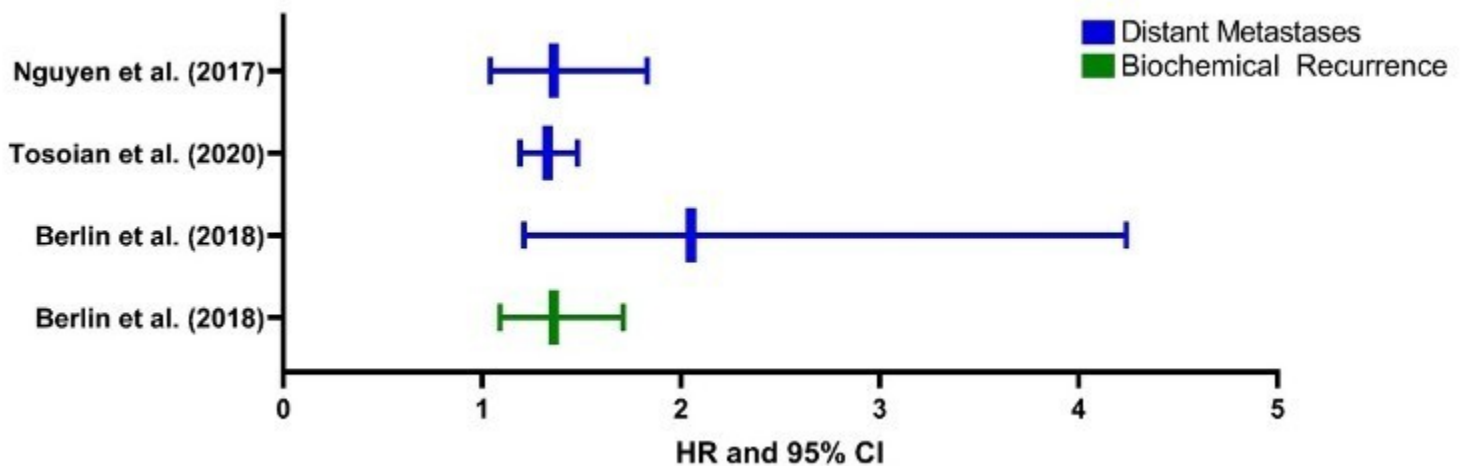


Figure 1 shows the hazard ratio (HR) and 95% confidence intervals of the Decipher score for prediction per 0.1 unit increase.

Conclusions: This work confirms the value of GCs and the promising evidence of GC utility in the setting of RT. The expert consensus points out future directions for GC research in the management of PCa.