An Individual Patient Data Meta-analysis of Outcomes and Prognostic Factors After Treatment of Oligometastatic Non–Small-Cell Lung Cancer

Allison B. Ashworth¹, Suresh Senan², David A. Palma¹, Marc Riquet³, Yong Chan Ahn⁴, Umberto Ricardi⁵, Maria T. Congedo⁶, Daniel R. Gomez⁷, Gavin M. Wright⁸, Giulio Melloni⁹, Michael T. Milano¹⁰, Claudio V. Sole¹¹, Tommaso M. De Pas¹², Dennis L. Carter¹³, Andrew J. Warner¹, and George B. Rodrigues¹.

¹Department of Radiation Oncology, London Health Sciences Centre, London, ON, Canada; ²VU University Medical Center, Amsterdam, Netherlands; ³Georges Pompidou European Hospital, Paris, France; ⁴Samsung Medical Center, Seoul, Korea; ⁵University of Turin, Department of Oncology, Turin, Italy; ⁶Department of General Thoracic Surgery, Catholic University of Sacred Heart, Rome, Italy; ⁷M.D. Anderson Cancer Center, Houston, TX, US; ⁸University of Melbourne Department of Surgery, St Vincent's Hospital Melbourne, Australia; ⁹Department of Thoracic Surgery, San Raffaele Scientific Institute, Milan, Italy; ¹⁰Department of Radiation Oncology, University of Rochester, Rochester, NY, USA; ¹¹Instituto Madrileño de Oncología, Madrid, Spain; ¹²European Institute of Oncology, Thoracic Oncology Division, Milan, Italy; ¹³Rocky Mountain Cancer Centers, Aurora, CO, US
Background

• Non-Small Cell Lung Cancer (NSCLC): leading cause of cancer-related death
  - ~1/2 present with stage IV disease
  - cancer spreads from original tumor to other sites in the body (metastases)

• Treatment: typically palliative chemotherapy
  - Survival: a few months

• But, some patients have only a few metastatic deposits (oligo-metastases)

• Reports of long-term survivors with removal of oligo-metastases with surgery/high dose radiotherapy
Analysis

• We performed an individual patient data meta-analysis:
  ▪ 20 cancer centers worldwide, 757 patients
  ▪ 1-5 oligometastases
    o Treated with surgery/high dose radiotherapy
    o Original lung tumor treated aggressively

• Do long term survivors really exist?

• What patient, disease and treatment factors predict for longer survival?

• Can we identify patients most likely to benefit from aggressive treatment?
Results

• Most patients younger, and with only a single metastasis

• Survival at 5 years: 29.4% - higher than average stage IV

• In this group, factors that predicted for longer survival:
  ▪ synchronous vs metachronous
  ▪ Nodal disease

• Risk Stratification Model for survival:
  ▪ Low risk/best survival: metachronous metastases: 5 yr. OS: 47.8%
  ▪ Intermediate risk: synchronous and Node - : 5 yr. OS: 36.2%
  ▪ High risk/worst survival: synchronous and Node +: 5 yr. OS 13.8%
Conclusion

• Some long term survivors do exist

• Selecting the right patients is critical

• We can only apply our conclusions to this patient population (i.e. healthier than average stage IV patient)

• Further clinical trials needed to determine if aggressive treatments are truly beneficial

• In the meantime, we hope our risk classification model can assist physicians in selecting patients most likely to benefit