Joint Effect of Height and Body Mass Index and Their Inverse Association with Mortality for Hemodialysis Patients Using Contour Plots: Results from the MONitoring Dialysis Outcomes Initiative (MONDO)

Alice Topping[1], Samir Patel[1], Xiaoling Ye[1], Bernaud Canaud[3], Danielle Marcelli[3], Aileen Grassmann[3], Cristina Marelli[3], Adrian Guinsburg[3], Xiaoqui Xu[5], Albert Power[4], Neill Duncan[4], Jeroen Kooman[6], Frank van der Sande[6], Len Usvyat[2], Yuedong Wang[7], Peter Kotanko[1], Jochen G. Raimann[1] and the MONDO Initiative

[1]Renal Research Institute, NYC, USA; [2]Fresenius Medical Care NA, Waltham, USA; [3]Fresenius Medical Care EMEALA, Bad Homburg, Germany; [4]Imperial College, London, UK; [5]Fresenius Medical Care AP, Hong Kong; [6]Maastricht University, Netherlands; [7]University of California Santa Barbara, USA.

Introduction

- While higher body mass index (BMI) is associated with morbidity and mortality in the general population, the inverse has been shown in hemodialysis (HD) patients (pts) [1]. Based on findings in the general population [2] an effect of height (HT), and not only weight, in the association between BMI and mortality risk may be assumed, evidenced by a recent study in the HD population [3]. We aimed to discern the effects of both BMI and HT on the risk of death in the MONDO database.

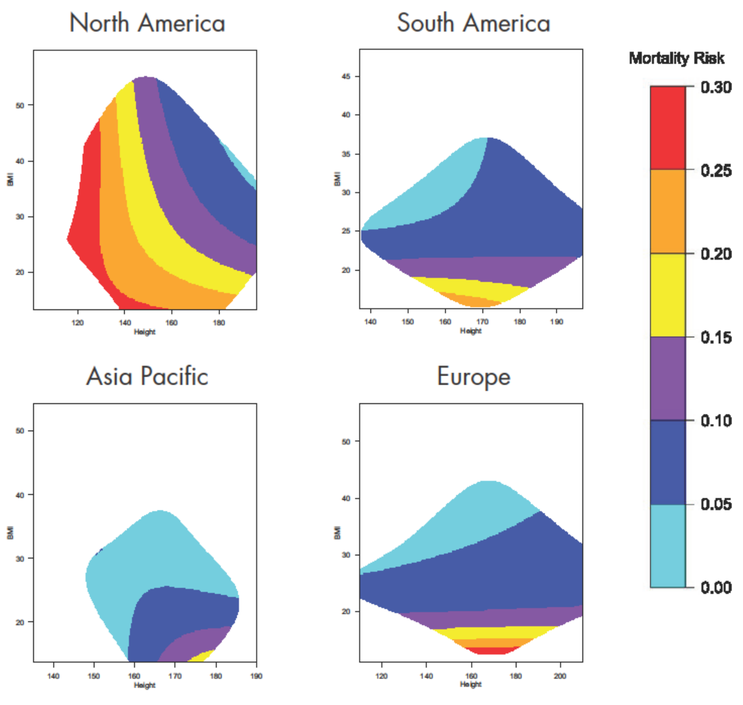
Methods

- Incident pts in Asia-Pacific (AP), North (NA) and South America (SA), and Europe (EU) between 01/2006 and 12/2010 were analyzed for outcomes during years 2 and 3 after HD initiation. The risk of all-cause mortality in the follow-up period was modeled employing a semi-parametric logistic regression using smoothing spline ANOVA models [4] adjusted for age and diabetes. We constructed contour plots that display mortality risk as a function of both HT and BMI in a continuous fashion in men and women for each region.

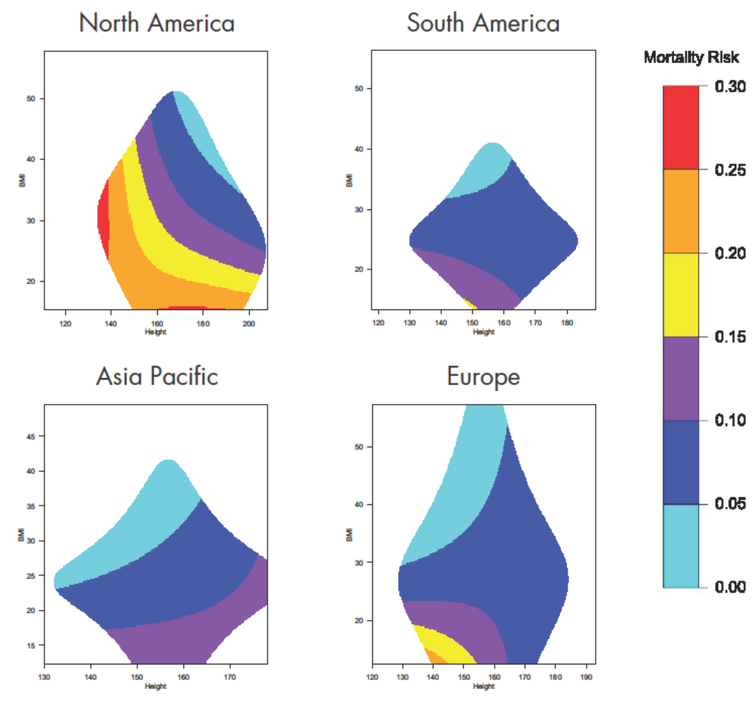
Results

- We studied 21,958 pts (62±15 years old, 42% F, BMI 26±6 kg/m^2, HT 1.7±0.1m, 17.2% AP, 45% EU, 19.4% NA, 18.4% SA). The joint effect of HT and BMI is most pronounced among NA men and women, where shorter HT at high BMI and taller HT at low BMI result in higher probability of death. In EU, SA and AP men there is little effect of HT at each BMI level, except BMI< 20 kg/m^2. For men in AP, lower BMI and taller HT results in higher probability of death. In women in AP, lower BMI and taller HT have highest probability of death, whereas for women in the EU, shorter HT at low BMI and taller HT at high BMI result in the highest probabilities of death.

a. Height (cm) and BMI (kg/m^2) among Men by Region



b. Height (cm) and BMI (kg/m^2) among Women by Region



Conclusions

- While smaller BMI is closely related to increased risk of mortality, height does modulate the strength of this relationship, especially at lower BMI, and has independent associations to the risk of death. The biological basis of this finding remains to be elucidated.

References

1. Abbott KC, Glanton CW, Trespalacios FC, *et al*. Body mass index, dialysis modality, and survival: Analysis of the United States Renal Data System Dialysis Morbidity and Mortality Wave II Study. Kidney Int 2004;65(2):597-605
2. Nelson CP, Hamby SE, Saleheen D, *et al*. Genetically determined height and coronary artery disease. New England Journal of Medicine 2015;372(17):1608-1618
3. Shapiro BB, Streja E, Ravel VA, *et al*. Association of Height with Mortality in Patients Undergoing Maintenance Hemodialysis. Clinical Journal of the American Society of Nephrology 2015:CJN. 07970814
4. Smoothing splines: Methods and Applications. CRC Press, Boca Raton, FL, 2011.

Poster: SP573 | Topics: Dialysis, Epidemiology, Outcome Research, Health Services Research
Alice Topping, MPH, alice.topping@rriny.com; Samir Patel, MD, samir.patel@rriny.com; Jochen Raimann, MD PhD, Jochen.Raimann@rriny.com
Renal Research Institute | 315 E 62nd ST 4th Floor | NY, NY 10065

53 ERA 573--SP
Dialysis. Epidemiology, outcome research, health services research.
Alice Topping
DOI: 10.3252/pso.eu.53era.2016
ePosters supported by F. Hoffmann- La Roche Ltd.
53rd Congress ERA-EDTA Vienna Austria May 21-24 2016
PosterSessionOnline.com