Red Blood Cell Distribution Width and the Risk of Cardiovascular Morbidity and All-cause Mortality: A population-based study

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Conflict of Interest

- The authors don’t have any conflicts of interest to disclose

Introduction

- Red blood cell distribution width (RDW) has been shown to predict cardiovascular mortality in various populations, but studies were less conclusive regarding cardiovascular morbidity.

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Int J Cardiol. 2010;146:278-280

- Past community based studies left the significance of this biomarker open for discussion:
  - patients were selected from a survey
  - were small (largest was 16000)
  - studies were limited to mortality
  - were unable to identify a relationship between RDW and cardiovascular morbidity

Aim

- We aimed at evaluating the prognostic effect of RDW on cardiovascular morbidity and all-cause mortality in the largest community cohort to date.

Methods

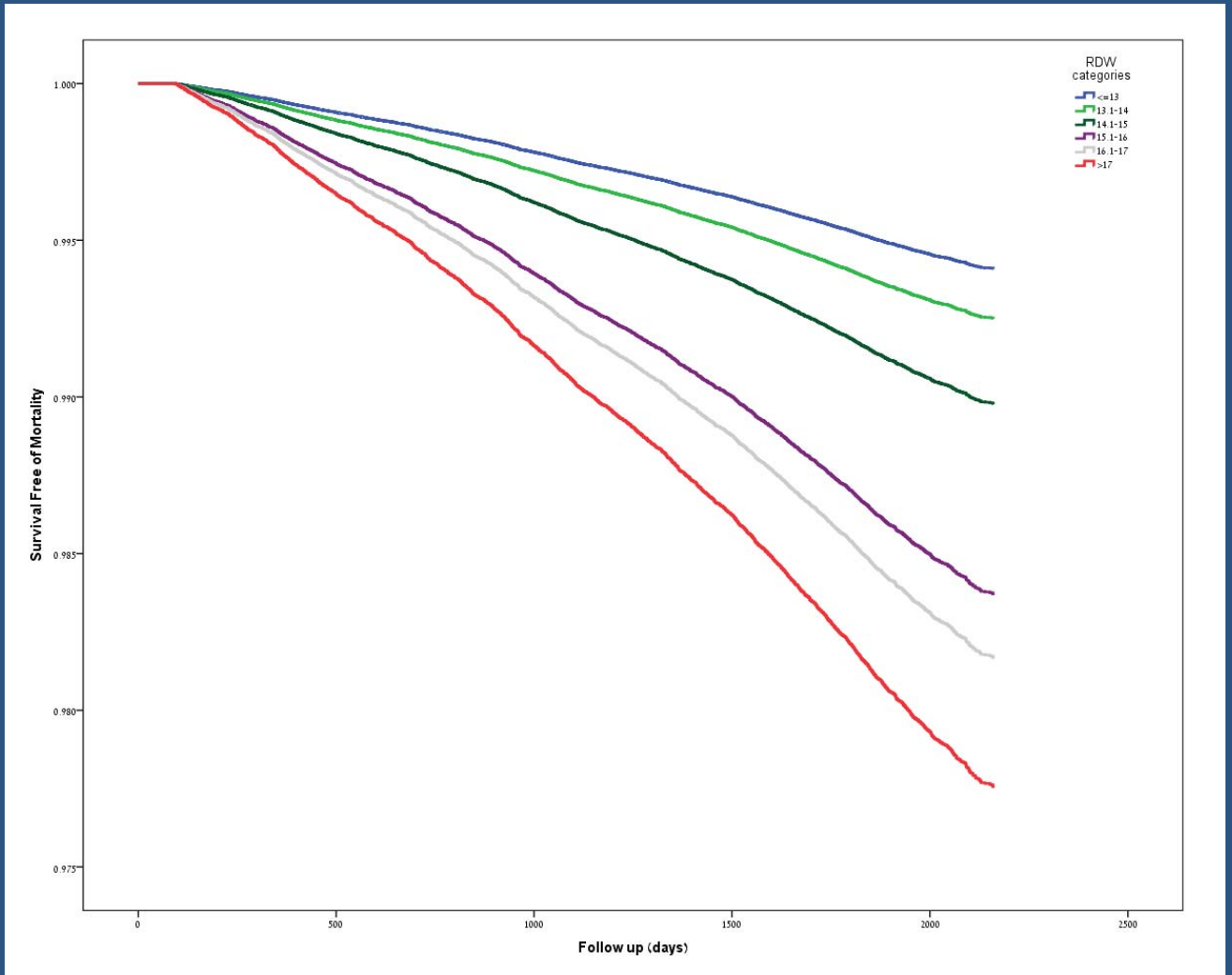
- Database of Macabi
- 254,473 eligible patients aged 40 or above that performed a blood count during 2006.
- Five Years of Follow Up

Results

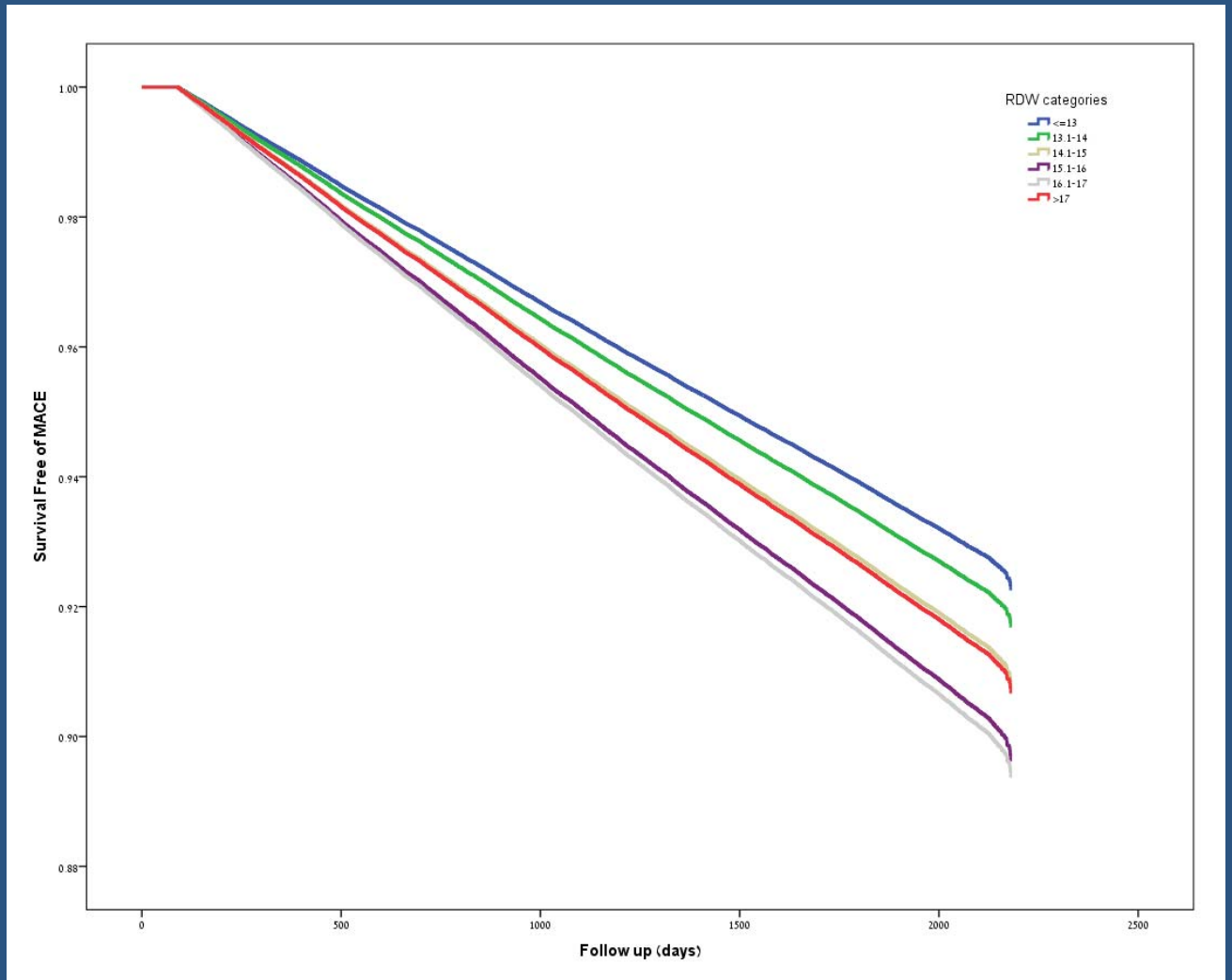
- During a total of 1.4 million person-years, a total of 23,949 incident cases of MACE and 5,236 deaths were documented.
- In a multivariable model, a positive dose response relationship between RDW level and all caused mortality or MACE was found starting at values above 13%.

- Compared to patients with a RDW of 13% or lower, patients with RDW>17% had a hazard ratio of 3.83 (95% CI: 3.12-4.69, P<0.001) for all-cause mortality and 1.22 (95% CI: 1.04-1.42, p=0.01) for MACE, after adjusting for multiple covariates.

All-Cause Mortality



Morbidity


RDW categories
<=13
13.1-14
14.1-15
15.1-16
16.1-17
>17
Survival Free of MACE
1.00
0.98
0.96
0.94
0.92
0.90
0.88
0
500
1000
1500
2000
2500
Follow up (days)

Discussion

- Mechanism not clear
- Inflammatory stress and release of cytokines that inhibit the activity of erythropoietin
- RDW has been associated with inflammatory markers such as soluble tumor necrosis factor receptors and C-reactive protein

Eur J Heart Fail. 2009;11:840-846
Am Heart J. 2009;158:659-666
Diabetes Care. 2010;33:e40

Thanks