Strut thickness and type of metal alloy of bare metal stents and frequency of in-stent-restenosis: Data from the Swedish Angiography and Angioplasty Registry (SCAAR).

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Background: The likelihood of in-stent-restenosis is influenced by patient characteristics, clinical circumstances, lesion characteristics and type of stent used. Among the stent factors that influence restenosis rates strut thickness is believed to be a determinant of in-stent-restenosis where ISAR-STEREO and ISAR-STEREO-2 showed that thinner struts were associated with lower restenosis rates. These studies used two stents with extreme strut thicknesses, which were 50 µm and 140 µm. We used the SCAAR database to investigate the question whether “thinner is better” applies to currently used BMS that only have a range of strut thickness between about 60 µm and 100 µm. Furthermore, we analyzed the influence of type of metal alloy on restenosis rates. SCAAR has been described in detail before [1, 2].

Methods and results: Restenosis rates were investigated in 111 889 stents. The patients were included between May 1, 2005 and April 6, 2010. The follow-up after implantation ended Oktober 6, 2010 with a minimum follow-up of 6 months and a maximum follow-up of 5 years and 5 months (mean follow-up 1080 days ± 523). The data were analyzed with regard to BMS, DES, different BMS types, stent strut thickness and metal alloy composition. The analysis was adjusted for differences in baseline characteristics known to influence restenosis rate.75 448 stents were BMS with strut thickness between 65 µm and 100 µm. The figure 2 shows the adjusted frequency of restenosis depending on strut thickness. The relative risk was 0.995 for thicker struts (95% confidence interval 0.990-0.999), p=0.017.

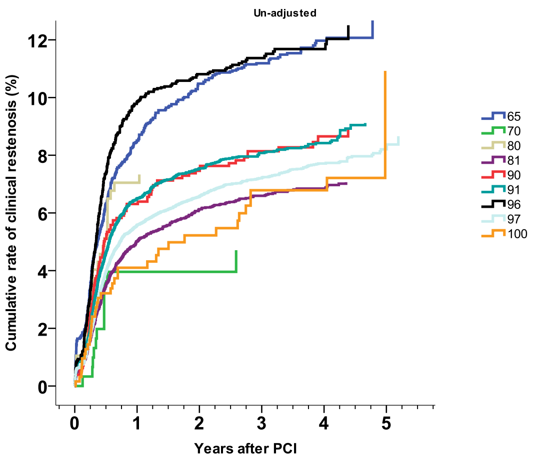

Figure 1: Cumulative crude risk of in-stent restenosis depending on strut thickness

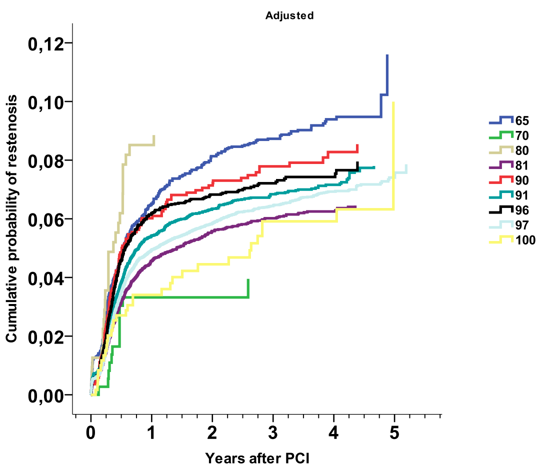

Figure 2: Cumulative adjusted risk of in-stent restenosis depending on strut thickness (RR 0.995 for thicker struts; 95% CI 0.995-0.999; p=0.017)

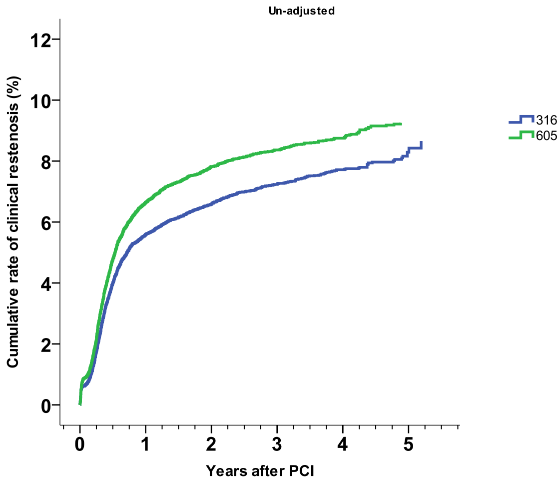

Figure 3: Cumulative crude risk of in-stent restenosis depending on metal alloy

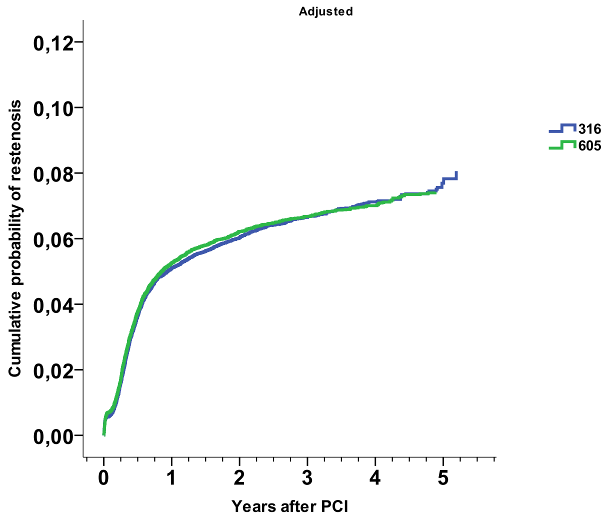

Figure 4: Cumulative adjusted risk of in-stent restenosis depending on metal alloy (RR 1.009; 95% CI 0.926-1.100; p=0.9)

Limitations

As always with retrospective evaluations of registry data, there are inherent limitations mainly regarding unknown confounders. Despite appropriate statistical adjustments, there might remain important differences in baseline characteristics and/or selection criteria that are unrecorded.

Conclusions: Thus, the old dogma that thinner stent struts are associated with lower restenosis rates may no longer be true with modern BMS. Metal alloy had no influence om restenosis rates.

References

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Disclosures no conflict of interest.