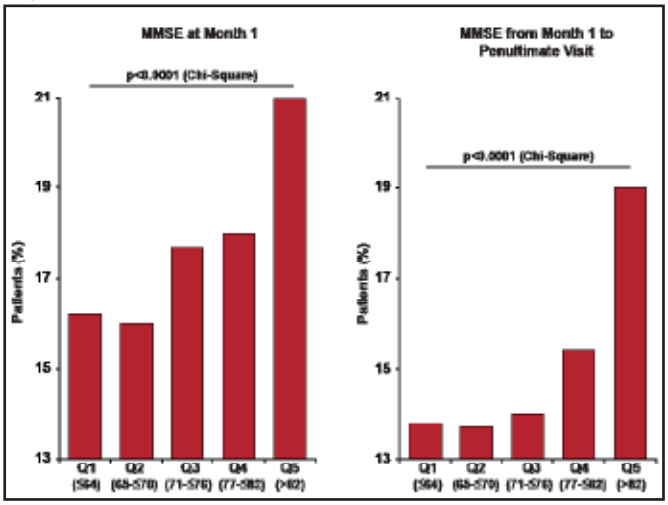
Figure 2. Mini-Mental State Examination ≤24 Points.



Among 1627 patients who had a recurrent stroke, the functional outcome at 3 months was better in patients with a lower heart rate at baseline. The baseline heart rate was also significantly associated with cognitive decline according to the MMSE score (≤24 points; p=0.0001; Figure 2); more patients with a heart rate >82 bpm had a decrease of 2 points on the MMSE between the 1 month and penultimate visits.

Prof. Böhm interpreted these findings as suggestive that lower heart rates may be associated with smaller strokes rather than fewer recurrent strokes. Further study will be needed to better understand whether heart rate plays a causative role in outcomes after stroke and whether therapies to reduce heart rate will be beneficial in patients experiencing a first stroke.

Outcomes from the CARDia Trial

Written by Lori Alexander

No clear evidence supports routine percutaneous coronary intervention (PCI) for patients with diabetes and multivessel disease, according to 5-year follow-up data from the Coronary Artery Revascularisation in Diabetes [CARDia; ISRCTN19872154] trial. Coronary artery bypass graft (CABG) surgery is favored, unless clinical features indicate that PCI is clearly preferable.

The CARDia trial was designed in the early 2000s as the first randomized comparison of PCI and CABG for patients with diabetes and multivessel (or complex disease of the left anterior descending) coronary artery disease [Kapur A et al. *J Am Coll Cardiol* 2010]. A total of 510 patients were randomized to CABG (n=254) or to PCI plus stenting and routine abciximab (n=256). The primary endpoint was a composite of all-cause mortality, myocardial infarction (MI), and stroke; the main secondary outcome included the addition of repeat revascularization to the primary outcome events. According to noninferiority analysis, PCI proved not to be noninferior to CABG at 1 year of follow-up (13.0% in the PCI group vs 10.5% in the CABG group; HR, 1.25; 95% CI, 0.75 to 2.09; p=0.39). The rates of all-cause mortality were similar for the 2 groups (3.2%).

Roger Hall, MD, Duke University, Durham, North Carolina, USA, reported the most recent findings of the trial. At a median of 5.1 years of follow-up, conventional intention-to-treat analysis did not show a significant difference in the primary endpoint for the 2 groups (26.6% in the PCI group vs 20.5% in the CABG group; HR,1.34; 95% CI, 0.94 to 1.93), but Dr. Hall said the study was underpowered for this comparison. PCI was associated with significantly higher rates of repeat revascularization (21.9% vs 8.3%; p<0.001), nonfatal MI (14% vs 6.3%; p=0.007), and a composite of death, MI, stroke, or repeat revascularization (37.5% vs 26%; p=0.005). There was no difference in nonfatal stroke (p=0.48). The similar all-cause mortality rates at 1 year continued at 5 years (14% in the PCI group and 12.6% in the CABG group; p=0.53; Table 1).

Table 1. Comparison of CABG and PCI at 5 Years of Follow-Up.

Adjudicated Events after Randomization	Patients (%)		p value	HR (95% CI)
	CABG	PCI		
Primary endpoint*	20.5	26.6	0.11	1.34 (0.94-1.93)
Non-fatal MI	6.3	14.0	0.007	2.26 (1.25-4.08)
Non-fatal stroke	4.3	3.1	0.48	0.72 (0.29-1.79)
Repeat revascularization	8.3	21.9	<0.001	2.87 (1.74-4.74)
Primary endpoint or repeat revascularization	26.0	37.5	0.005	1.56 (1.14-2.14)
All-cause mortality	12.6	14.0	0.53	1.17 (0.73-1.87)

*Composite of death, nonfatal MI, or nonfatal stroke; CABG=coronary artery bypass graft; MI=myocardial infarction; PCI=percutaneous coronary intervention.

Dr. Hall noted that the findings did not confirm the results of other studies showing much higher mortality at 5 years in association with PCI, and thus, PCI may be an option in carefully selected patients with diabetes and multivessel disease as an alternative to CABG, although the latter remains the preferred method of revascularization for the majority of these patients.