

Prognostic performance of different thresholds of left atrial diameter to predict atrial fibrillation after embolic stroke of undetermined source

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Aims

We analyzed consecutive patients with embolic stroke of undetermined source (ESUS) from 3 prospective stroke registries (Athens, Larisa, Lausanne) to compare the prognostic performance of different left atrial diameter (LAD) thresholds for the prediction of detection of atrial fibrillation (AF).

Methods

We calculated the sensitivity, specificity, positive prognostic value (PPV), negative prognostic value (NPV) and Youden's J-statistic of different LAD thresholds to predict AF detection. We performed multivariate stepwise regression with forward selection of covariates to assess the association between the LAD threshold with the highest Youden's J-statistic and AF detection

Results

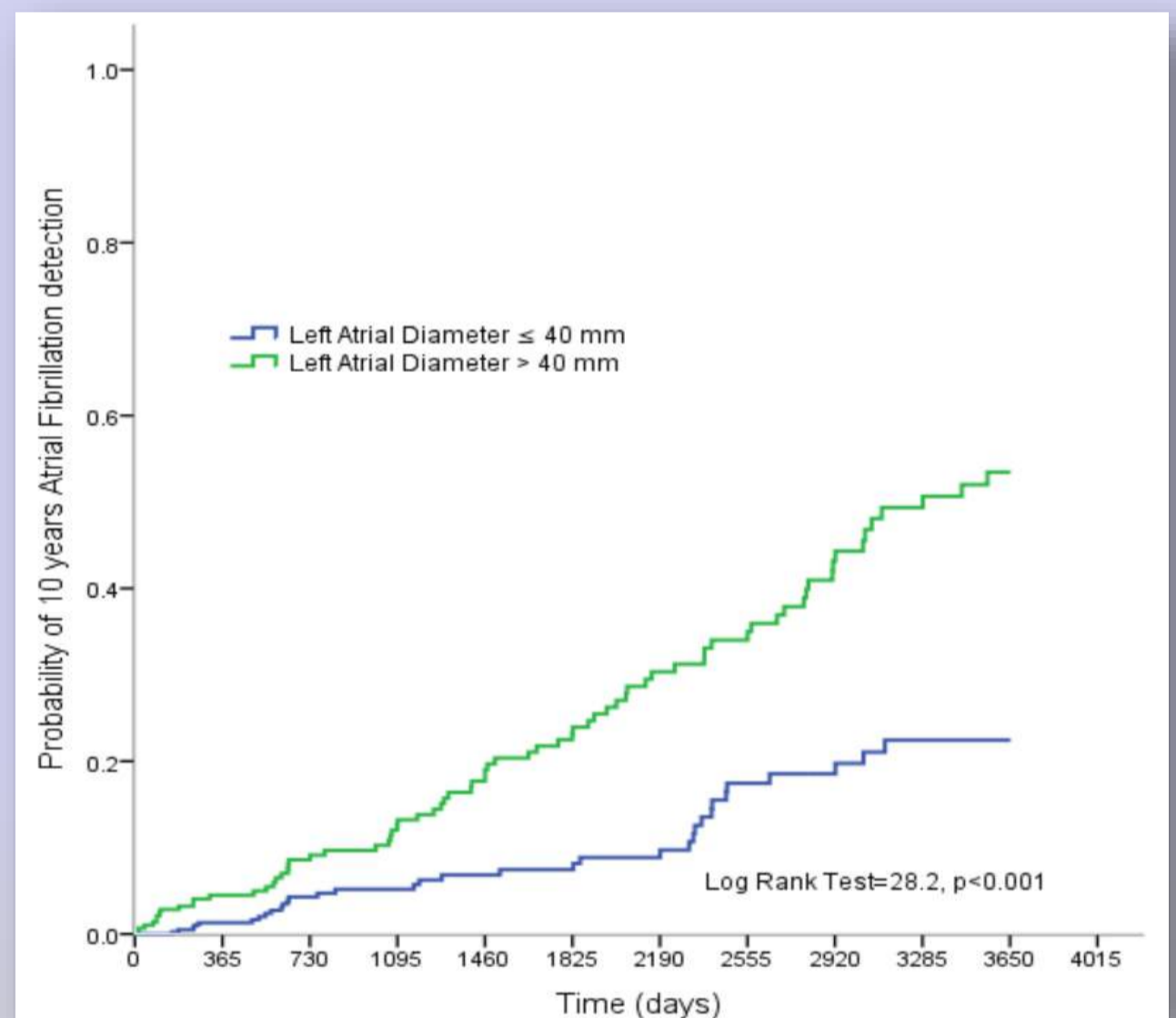
Among 675 patients followed for 2437 patient-years, the mean LAD was 38.5±6.8mm. AF was detected in 115 (17.0%) patients. The LAD threshold of **40mm** yielded the highest Youden's J-statistic of 0.35 with sensitivity 0.69, specificity 0.66, PPV 0.27 and NPV 0.92. The likelihood of AF detection was nearly twice in patients with LAD>40mm compared to LAD≤40mm (HR:1.92, 95%CI:1.24-2.97, p=0.004). The 10-year cumulative probability of AF detection was higher in patients with LAD>40mm compared to LAD≤40mm (53.5% and 22.4% respectively, log-rank-test:28.2, p<0.001).

Results (con.)

The annualized rate of stroke recurrence of 4.0% in the overall population did not differ significantly in patient above vs. below this LAD threshold (HR:0.96, 95%CI:0.62-1.48, p=0.85).

Conclusions

The LAD threshold of 40mm has the best prognostic performance among other LAD values to predict AF detection after ESUS. In ESUS patients with LAD≤40mm, the probability that AF will not be detected during a follow-up of 3.6 years is 92%.



LAD (mm)	Proportion of patients above this threshold	Proportion of patients detected with AF above this threshold	Sensitivity	Specificity	Positive predictive value	Negative predictive value	Youden's J-statistic
>37	56,4	22,8	0,85	0,49	0,23	0,95	0,34
>38	50,7	23,9	0,79	0,55	0,24	0,94	0,34
>39	46,0	24,8	0,74	0,60	0,25	0,93	0,34
>40	39,1	26,5	0,69	0,66	0,27	0,92	0,35
>41	35,2	26,9	0,63	0,70	0,27	0,91	0,32
>42	28,3	25,1	0,47	0,75	0,25	0,89	0,22
>43	22,5	23,0	0,34	0,80	0,23	0,87	0,14
>44	17,6	22,7	0,26	0,84	0,23	0,87	0,10
>45	13,0	23,9	0,21	0,88	0,24	0,86	0,09
>46	10,1	25,0	0,17	0,91	0,25	0,86	0,08
>47	9,0	26,2	0,16	0,92	0,26	0,86	0,08
>48	7,1	25,0	0,12	0,94	0,25	0,86	0,05
>49	6,2	19,0	0,08	0,94	0,19	0,85	0,02
>50	3,4	26,1	0,06	0,97	0,26	0,85	0,03
>51	2,5	29,4	0,05	0,98	0,29	0,85	0,03
>52	1,6	45,5	0,05	0,99	0,45	0,85	0,04
>53	1,5	50,0	0,05	0,99	0,50	0,85	0,04
>54	1,0	57,1	0,04	0,99	0,57	0,85	0,03

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