Diagnostic Accuracy of the Ankle-Brachial-Index (ABI)

Background: Prediction of risk for myocardial infarction (AMI) is difficult in primary care. Especially subjects with intermediate risk for AMI need to be further stratified for their risk in order to avoid the problem of low sensitivity of global risk calculators, such as the PROCAM risk algorithm, where 2/3 of AMI do not occur in the high risk group.

Aim: to review the literature about ABI risk for AMI in an originally healthy cohort without a history of vascular disease and to calculate the diagnostic performance of ABI in these subjects.

Results: based on the review of the literature, the diagnostic accuracy of ABI can be calculated based on the data of the Cardiovascular Health Study (Arterioscler Thromb Vasc Biol. 1999;19:538-545). All subjects in this study were at least 65 years old.

	Events		
	<0.9	>0.9	ALL
AMI	33	169	
ALL	409	3859	4268

	TP	TN	FP	FN	SENS	SPEZ	PPV	NPV	ACC	ALL	pLR	nLR
AMI	33	3690	376	169	16	91	8	96	87	4268	1.8	0.92

Posttest risk calculator (Bayes theorem) for AMI in 10 Years. PRETEST=PROCAM risk calculator

A) ABI < 0.9 (test is positive or pathologic)

PRETEST	0.15
SENSITIVITY	0.16
SPECIFICITY	0.91
RESULT	0.24

B) ABI =/> 0.9 (test is negative or normal)

PRETEST	0.15
SENSITIVITY	0.16
SPECIFICITY	0.91
RESULT	0.14

Conclusions: in this large primary care cohort aged 65 years or more 5% of the cohort suffered AMI during follow-up of 6 years. In the group of subjects with an ABI < 0.9 at baseline, only 33 out of 169 AMI were observed (sensitivity 16%). However, specificity was high (91%). The posttest calculator shows therefore, that if ABI is < 0.9, a subject with intermediate PROCAM risk (15%) is shifted into the high risk category and should be treated as such. However, in subjects with a normal ABI, posttest risk is not changed. Since PROCAM is already a very specific test (90%), but has low sensitivity (33%), in sequential testing a more sensitive test would be preferred than ABI.

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