

Tab. 6. Relationship between selected patient characteristics and postponement or canceling of surgery due to chest X-ray findings

Parameter	Category	No Delay N = 2,357	PCCS N = 5	P
Age		63 (±15)	81 (±7)	0.007
Hypertension	No	1,028 (43.6%)	2 (40.0%)	0.999
	Yes	1,329 (56.4%)	3 (60.0%)	
Chronic coronary syndrome	No	1,969 (83.5%)	3 (60.0%)	0.193
	Yes	388 (16.5%)	2 (40.0%)	
Chronic heart failure	No	2,294 (97.3%)	5 (100.0%)	0.999
	Yes	63 (2.7%)	0 (0.0%)	
Ischemic or hemorrhagic stroke	No	2,152 (91.3%)	5 (100.0%)	0.999
	Yes	205 (8.7%)	0 (0.0%)	
Atrial fibrillation	No	2,165 (91.9%)	4 (80.0%)	0.347
	Yes	192 (8.1%)	1 (20.0%)	
Diabetes	No	1,820 (77.2%)	4 (80.0%)	0.999
	Yes	537 (22.8%)	1 (20.0%)	
Pulmonary disease	No	2,048 (86.9%)	5 (100.0%)	0.999
	COPD	133 (5.6%)	0 (0.0%)	
	AB	100 (4.2%)	0 (0.0%)	
	ACOS	14 (0.6%)	0 (0.0%)	
	Other	62 (2.6%)	0 (0.0%)	
BMI, kg/m ²		27.8 (±5.6)	28.4 (±5.4)	0.576
Smoking	Non-smoker	1,376 (58.4%)	5 (100.0%)	0.243
	Smoker	702 (29.8%)	0 (0.0%)	
	Ex-smoker	279 (11.8%)	0 (0.0%)	
Potassium, mmol/l		4.24 (±0.48)	3.78 (±0.57)	0.050
CRP, mg/l		7 (3–42)	189 (108–231)	0.001
Systolic blood pressure, mmHg		139 (±21)	136 (±19)	0.911
Diastolic blood pressure, mmHg		80 (±12)	71 (±11)	0.067
Heart rate, beats/min		79 (±16)	71 (±10)	0.196

Values are the mean (±standard deviation), number (%), or median (intraquartile range), as indicated. PCCS – postponement or canceling of surgery; COPD – chronic pulmonary obstructive disease; AB – bronchial asthma; ACOS – asthma-COPD overlap syndrome; BMI – body-mass index; CRP – C-reactive protein

Tab. 7. Age and heart rate predict change in preoperative management due to electrocardiogram

Predictor	AUC (95% CI)	P	Cut-off	Sensitivity	Specificity	PPV	NPV	Overall accuracy
Age, y	0.786 (0.696–0.876)	0.048	≥ 72	100.0%	67.1%	0.5%	100.0%	67.2%
HR, bpm	0.995 (0.991–1.000)	0.001	≥ 125	100.0%	98.8%	12.1%	100.0%	98.8%

AUC – area under the receiver operating characteristic curve; CI – confidence interval; NPV – negative predictive value; PPV – positive predictive value; HR – heart rate; bpm – beats per minute

Tab. 8. Age and CRP as predictors of change in preoperative management due to chest X-ray

Predictor	AUC (95% CI)	P	Cut-off	Sensitivity	Specificity	PPV	NPV	Overall accuracy
Age, y	0.850 (0.744–0.955)	0.007	≥ 70	100.0%	61.5%	0.5%	100.0%	61.6%
CRP, mg/l	0.913 (0.855–0.971)	0.001	≥ 62	100.0%	80.6%	1.2%	100.0%	80.6%

AUC – area under the receiver operating characteristic curve; CI – confidence interval; NPV – negative predictive value; PPV – positive predictive value; CRP – C-reactive protein

was also a significant association between chronic coronary syndrome, atrial fibrillation and the risk of PCCS, although on a lower level of statistical significance ($p=0.016$ and $p=0.036$ respectively).

All patients with a PCCS due to pneumonia detected on a CXR had a significantly higher CRP level than those without pneumonia (median CRPs: 189 vs. 7 mg/l, $p=0.001$). All patients with pneumonia had CRP levels above 61 mg/l. These patients were also older than the others (mean 81 vs. 63 years, $p=0.007$), and all were over 69 years old. Furthermore, we found that ages ≥ 70 years and CRP levels ≥ 62 mg/l were statistically significant predictors of a change in preoperative management, due to an abnormal CXR (Table 8).

There was a significant association between 90-day postoperative all-cause mortality and preoperative heart rate (HR). When using heart rate of 70–79 bpm as a reference point, there was a significantly elevated risk of 90-day postoperative all-cause mortality in patients with HR above 100 bpm (2.08, $p=0.005$), relative risk further increasing with the higher heart rates, for the detailed distribution of relative risks in the heart rate spectrum see the Table 9 and the Diagram 1.

Additionally, there was significantly increased risk of 90-day postoperative all-cause mortality in patients with abnormal CXR (RR=2.49, $p=0.001$) compared to patients with normal CXR findings (see Table 10).