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Oxidative stress and severity of coronary artery disease in patients with acute coronary syndrome



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Aims Oxidative stress is associated with atherosclerosis and plaque lesions in experimental in vitro models. Few in vivo studies have examined the association between redox status and the prognosis of acute coronary syndromes. We aimed to investigate the relation between the oxidative stress and coronary artery disease (CAD) severity in patients presenting with acute coronary syndromes.

Methods and Results We undertook a prospective, observational study of 117 patients who had been admitted because of an acute coronary syndrome. We recorded clinical and angiographic features and cardio-vascular events (cardio-vascular death, reinfarction, readmission with a new ischemic event, or need for coronary revascularization). Oxidative stress indices including glutathione peroxidase (GPX) and superoxide dismutase (SOD) activities were measured in serum (markers of systemic antioxidant status).

The mean age of the patients (86% of whom were men) was 61.5 ± 11.7 years; 57.3% were admitted with non-ST-segment-elevation acute coronary syndrome. Left ventricular ejection fraction was normal ($> 50\%$) in 53.4%.

Both SOD and GPX were associated with the severity of coronary artery disease (CAD). SOD and GPX levels were significantly lower in patients with 3-vessels disease $P=0.001$ and $P=0.017$ respectively). SOD and GPX activities were correlated with the SYNTAX score ($y = 1.3 \pm 0.01$, $R^2=0.01$). Mean duration of the follow-up period was 6.9 ± 2.05 months. In the 15.15% who experienced cardio-vascular events, SOD and GPX activities were lower, without statistical correlation ($P=0.56$, $P=0.23$).

Conclusion Oxidative stress is an important contributor to CAD. A low level of activities of SOD and GPX is independently associated with the severity of coronary artery disease in patients presenting an acute coronary syndrome.

Disclosure of interest The authors declare that they have no competing interest.

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Gray zone fractional flow reserve 0.81–0.85 is associated with an increased risk of cardio-vascular events



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Aims Fractional Flow Reserve (FFR) is a widely accepted prognostic tool to estimate the risk of myocardial ischemia in coronary

stenosis. Values above 0.80 are considered as an indication for medical therapy only. Whether intermediate values ranging from 0.81 to 0.85 are associated with an increase cardio-vascular (CV) risk is unknown.

Methods In a prospective study, 91 patients with $FFR > 0.80$ were enrolled and followed up for at least 1 year. Clinical outcomes of the subgroup with $FFR > 0.85$ ($N=67$) were compared with those of the subgroup with intermediate values of 0.81–0.85 ($N=24$). The outcome was a composite of cardio-vascular death/myocardial infarction/CV hospitalization/target lesion revascularization.

Results There was significant difference in baseline demographic data or medical therapy between the two groups (Table 1).

The average follow-up is 2.505 ± 0.6 years. We observed a significantly higher number of events in patients with FFR between 0.81 and 0.85 than in those with $FFR > 0.85$. These events occurred respectively in 45.9% and 13.4% of patients ($P=0.01$) and were mostly the result of revascularizations and CV hospitalizations (Fig. 1).

Conclusion FFR values in the gray zone of 0.81–0.85 are correlated with an increased CV risk compared to FFR values > 0.85 . Appropriately powered trials are needed to assess the potential benefit of revascularization in this subset of patients.

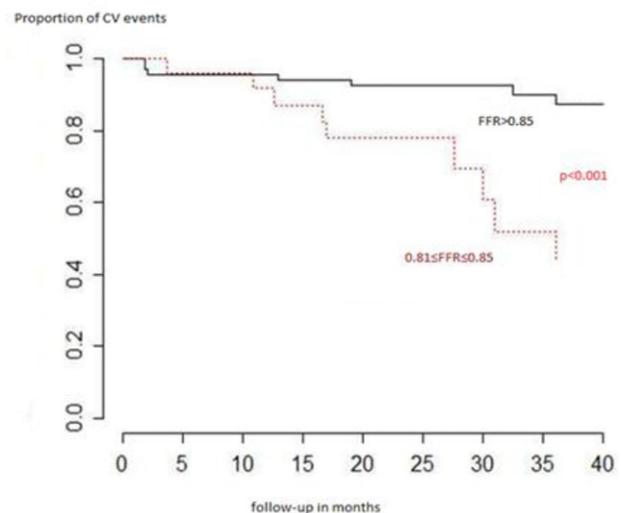


Fig. 1

Table 1 Demographic data.

	FFR > 0.85 (N= 67)	FFR ≤ 0.85 (N= 24)	P value
Age	68.95	65.97	0.27
Number of men	47(70.1%)	20(83.3%)	1
Tabacco	43(64.2%)	15(62.5%)	1
Diabetes	12(17.9%)	7(29.2%)	0.38
Hypertension	47(70.1%)	13(54.2%)	0.24
Dyslipidemia	45(67.2%)	15(62.5%)	0.87

Disclosure of interest The authors declare that they have no competing interest.

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