Characterization of thromboembolic and bleeding risks in cancer patients with acute myocardial infarction under the use of guideline-recommended dual-antiplatelet therapy

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Background: Atherosclerotic cardiovascular disease including acute myocardial infarction (AMI) has become one of major co-existing diseases in cancer patients due to their improved survival rate. Current guideline recommends dual-antiplatelet therapy (DAPT) in patients with AMI. Given that the presence of cancer elevates not only coagulability but bleeding risks, these substrate may further worsen cardiovascular outcomes and bleeding risks in cancer subjects with AMI receiving DAPT.

Methods: We retrospectively analyzed 712 AMI patients treated by primary PCI with drug-eluting stent and DAPT between 2007 and 2017. The diagnosis of cancer was determined through medical record review. Clinical characteristics, thromboembolic (=all-cause death+non-fatal MI+stroke) and bleeding events were compared in AMI subjects with vs. without cancer.

Results: Cancer was identified in 11.1% (=79/712) of study subjects. Of these, around 40% of them had gastrointestinal cancer (=35/79), followed by lung cancer (=5/79) and breast cancer (=8/79). Cancer patients were more likely to be older (77±7 v. 69±13 years, p<0.001) with a history of Af (25 v. 10%, p<0.001), CKD (eGFR<60: 60 v. 42%, p=0.002), anemia (hemoglobin: 12.8±1.8 v. 13.9±1.8 g/dl, p<0.001). Under anti-thrombotic (DAPT=86%, triple-antiplatelet therapy=14%) and optimal medical therapies (ACE-I=90%, beta-blocker=76%, statin=96%), more frequent occurrence of thromboembolic events was observed in patients with cancer (34.2 v. 12.6%, p=0.004, Picture). Furthermore, the presence of cancer was associated with more than four times greater risk of bleeding events compared to non-cancer subjects (18.9 v. 4.3%, p<0.001, Picture). In particular, the frequency of both major (10.1 vs. 3.3%, p=0.003) and minor (8.9 vs. 0.9%, p<0.001) bleeding events was significantly higher in patients with cancer. In multivariate analysis, cancer independently predicted bleeding events (Table).

Conclusions: Under the use of guideline recommended DAPT, the concomitance of cancer in AMI subjects was a predictor for thromboembolic as well as bleeding events. In particular, the relationship between cancer and bleeding was significant. These observations underscore the appropriate selection and duration of anti-thrombotic agents in AMI subjects with cancer.

Multivariate analysis of bleeding

	Odd	95% CI	P value		Odd	95% CI	P value
Cancer	4.42	2.06–9.46	0.0001	Af	0.66	0.22–1.99	0.46
Age	1.03	0.99–1.07	0.064	CKD	0.72	0.34–1.52	0.39
Male gender	0.88	0.40–1.91	0.74	Triple-antiplatelet therapy	1.29	0.46–3.67	0.63
Killip4	3.15	1.26–7.88	0.015				

Cardiac/Bleeding Events in AMI Subjects