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Abstracts

EPIDEMIOLOGY AND HEALTH POLICY

342 Impact of temporary traffic bans on the risk of acute coronary syndromes in a large metropolitan area

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Aims: Strong epidemiologic evidence has highlighted the role of pollution, on top of adverse climate features, as a novel cardiovascular risk factor. However, mechanistic proof that reducing pollution may be beneficial to prevent atherothrombotic events is limited. We aimed at appraising the impact of temporary traffic bans in a large metropolitan area on the risk of acute coronary syndromes.
Methods and results: Aggregate and anonymized data from 15 tertiary cardiac care centers were obtained detailing pre-coronarivus disease 2019 (COVID-19) daily cases of ST-elevation myocardial infarction (STEMI) and non-ST-elevation myocardial infarction (NSTEMI), including those treated with percutaneous coronary intervention (PCI). Data on pollutants and climate were sought for the same days. Mixed level regression was used to compare the week before vs. after the traffic ban (Fortnight analysis), the 3 days before vs. after (Weekly analysis) and the Sunday before vs. after (Sunday analysis). A total of 8 days of temporary traffic bans were included, occurring between 2017 and 2020, totaling 802 STEMI and 1196 NSTEMI in the Fortnight analysis, 382 STEMI and 585 in the Weekly analysis, and 148 STEMI and 210 NSTEMI in the Sunday analysis. Fortnight and Sunday analysis did not disclose a significant impact of traffic ban on STEMI or NSTEMI (all $P > 0.05$). Conversely, Weekly analysis showed non-significant changes for STEMI but a significant decrease in daily NSTEMI when comparing the 3 days before the traffic ban with the ban day ($P = 0.043$), as well as the 3 days before vs. the 3 days after the ban ($P = 0.025$). No statistically significant effect of traffic ban was found at Fortnight, Weekly or Sunday analyses for daily mean concentrations of benzene, carbon monoxide, nitric oxide, nitrogen dioxide, ozone, sulfur dioxide, particulate matter (PM) $<2.5\,\mu m$ or PM $<10\,\mu m$ (all $P > 0.05$). However, minimum daily concentrations showed a significant reduction of ozone during the ban in comparison to the week preceding it ($P = 0.034$), nitric oxide during the ban in comparison to the 3 days preceding it ($P = 0.046$), and an increase in benzene during the ban in comparison to the Sunday before ($P = 0.039$).
Conclusion: Temporary traffic bans may favorably reduce coronary atherothrombotic events, and in particular NSTEMI, even if not globally and immediately impacting on environmental pollution. Further controlled studies are required to confirm and expand this hypothesis-generating results.

486 The paradox of LDL cholesterol management in secondary prevention: keeping the gun in the holster

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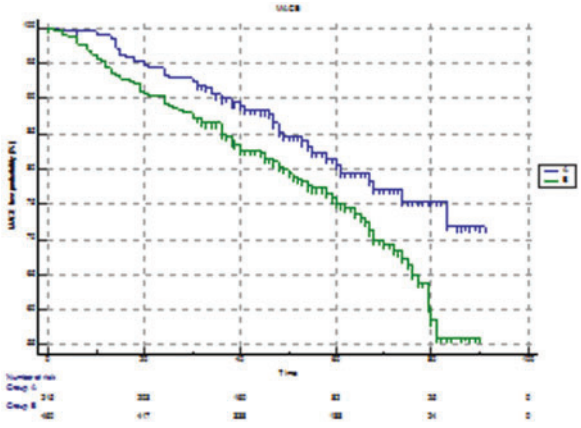
Aims: Current European Society of Cardiology (ESC) guidelines strongly recommend for secondary prevention a combination therapy with a PCSK9 inhibitor for patients at very-high cardiovascular risk not achieving their LDL cholesterol (LDL-C) goals on a maximum tolerated dose of a statin and ezetimibe. Nonetheless, a wide gap exists between the LDL-C target recommended (LDL <55 mg/dL) by ESC guidelines and the prescription criteria adopted by the Italian drug regulatory agency (AIFA) (LDL ≥ 100 mg/dL). The aim of the present study was to investigate the prevalence of patients within this gap and their risk of cardiovascular events in a real-world cohort.
Methods and results: We conducted a retrospective analysis of a monocentric observational registry prospectively enrolling patients admitted to our hospital for ST segment elevation myocardial infarction (STEMI) and followed-up in our dedicated post-myocardial infarction (PMI) ambulatory. We considered the combined endpoint of major adverse cardiovascular events (MACE) defined as a composite of all-cause death, non-fatal MI, non-fatal stroke and unplanned revascularization. LDL-C was collected at baseline and during follow-up; the lower value at follow-up was used to define the achievement of the target. We conducted a Kaplan-Meier analysis and log-rank test comparing patients who achieved LDL-C <55 mg/dL (group A) vs. those with LDL-C between 55 and 100 mg/dL (group B). Continue variable are presented as median (interquartile range). A total of 814 patients (23% female) were included in the analysis. Median age was 63 (55–72) years, 57% had hypertension, 19% diabetes, and 36% were smokers. Median follow-up was 52 (34–66) months. A total of 83.3% of patients were treated with statin therapy alone (73% high intensity), and 15.3% with the addition of ezetimibe. LDL-C <55 mg/dL was achieved in 244 patients (30%), 55 patients had LDL-C >100 mg/dL, while 515 patients (63%) remained in the gap between 55 and 100 mg/dL. High intensity statin and ezetimibe prescription was not significantly different between group A and B (respectively 86% vs. 87.9%; $P = 0.45$ and 11.6 vs. 17%; $P = 0.06$). The net incidence of MACE was 16.4% in group A vs. 23.9% in group B (HR 0.68; 95% CI 0.49–0.94; P log-rank $= 0.02$; Number Needed to Treat $= 13$; see Figure).
Conclusion: The majority of PMI patients, despite high intensity lipid-lowering therapy, fail to reach the recommended LDL-C target in a real-world cohort. Importantly, the prognosis of patients with LDL-C values between 55 and 100 mg/dL was significantly worse than that of patients achieving values <55 mg/dL. A discussion with healthcare authorities is warranted to improve the prescription of PCSK9 inhibitors in this very high-risk cohort of patients in line with current guidelines recommendation.



501 CO, NO2 and 03 levels and out-of-hospital cardiac arrest in a large cohort of patients from Progetto Vita

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Aims: Out-of-hospital cardiac arrest (OHCA) is a leading cause of death worldwide. It accounts for up to 50% of all cardiovascular deaths. The incidence of OHCA in Italy is about 1.51 arrests/1000 admission/year. Recent studies have sought to find a link between short-term exposure to air pollutants and OHCA. It is well established that ambient air pollution triggers cardiovascular fatal and nonfatal events, but the results are still controversial. Most studies on this subject were performed in developed countries with only a paucity of data from Asia, where air pollution is increasingly becoming a major healthcare issue. The objective of this study was to investigate the impact of short-term exposure to outdoor air pollutants on the incidence of OHCA in Piacenza, Italy. Outcomes were the incidence of cardiac arrest.

Methods and results: NO2 (nitrogen dioxide), CO (Carbon monoxide) and 03 (Ozone) levels were extracted from Environmental Protection Agency (ARPA) local monitoring stations; OHCA were extracted from Progetto Vita Database of Cardiac arrest. Conditional logistic regression models estimated odds ratios (OR) with 95% confidence intervals (CI). NO levels exceeded safe threshold recommended by Italian legislation for 46%, CO for 10% and 03 for 62% of the whole period. RESULTS: 880 OHCA occurred on 750 days, with 2174 control days. Mean age of OHCA patients was 76 $\pm$ 15 years. Concentration of NO2 and CO were significantly higher on days with occurrence of OHCA (respectively 412 $\pm$ 196 $\mu g/m^3$ vs. 442 $\pm$ 212 $\mu g/m^3$ $P < 0.0001$ for NO2 and 52 $\pm$ 31 vs. 57 $\pm$ 32 for CO). Risk of OHCA presentation was significantly increased by high concentration of CO, OR 1,100 (95% CI 1.001–1.223), and not significantly for NO2 (OR 1.053, 95% CI 0.948–1.169). No significant differences were found in 03 levels.

Conclusion: The results of this study confirm the link between OHCA and NO2 and CO a in large cohort of patients from a high pollution area.