Cardio Mag

Volume 1|Issue 12|2020

Dear Doctor,
*Greetings from Micro Labs Limited. We are happy to bring you "**Cardio Mag**", which contains latest and interesting news in the field of Cardiology.*

This issue contains

- ***Effect of lipoprotein (a) on long-term clinical outcomes after percutaneous coronary intervention on statin therapy***
- ***Coronary spasm with angina in a multiple myeloma patient – A case report***
- ***A new device gets FDA clearance for Cardiac Monitoring in COVID Patients.***

Should you require any specific article or medical information, please feel free to contact us at ***medicalservices@microlabs.in***

Looking forward to your valuable feedback.
Best Regards,
Medical Team, Micro Labs Limited

1. Effect of lipoprotein (a) on long-term clinical outcomes after percutaneous coronary intervention on statin therapy

Diabetes mellitus(DM) is increasing in incidence worldwide. There is a strong correlations between diabetes and CVD events . Patients with diabetes are at 2- to 4- times with higher CVD risk compared to those without diabetes.

Many trials have reported that Statin therapy significantly reduced cardiovascular events in patients with coronary artery disease . But residual risk still prevails. Reducing this residual risk represents an important step to further prevention of cardiovascular events.

Lipoprotein (a) has atherothrombotic and proinflammatory properties, increased serum Lp(a) is associated with an increased frequency of adverse clinical events among patients with CAD after percutaneous coronary intervention (PCI).

Objective of the current study is to evaluate the prognosis of estimation of lipoprotein (a) on long term outcomes after PCI.[1]

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Methods:

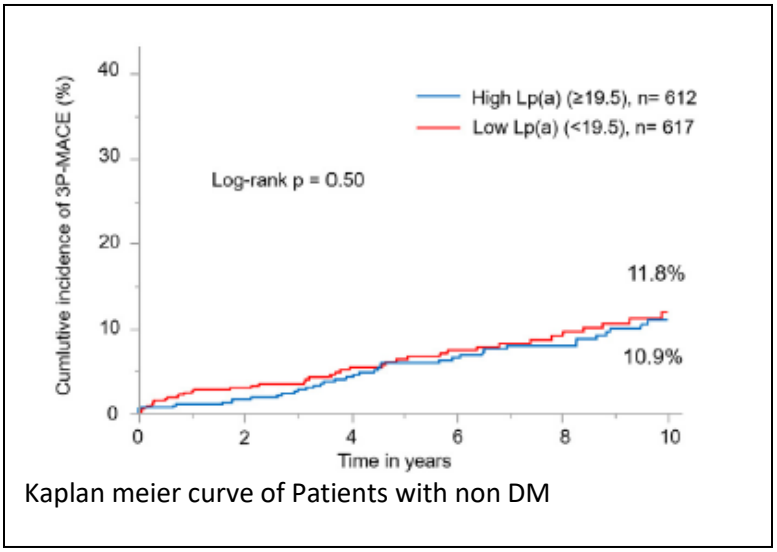
An observational retrospective cohort study done in a single center.

Diabetic patients with statin therapy who underwent PCI were included in the study.

800 patients (81% men; mean age, 67 years) were include in the study and divided into 2 groups 1 group with Lp(a) level less than 19.5 mg/dL and another group Lp(a) levels of ≥ 19.5 mg/dl.

Patients with data not available on Lipoprotein {Lp(a)} , patients undergoing hemodialysis were excluded from the study.

Primary end points were assessment of Patients were evaluated for the incidence of major adverse cardiac events (MACE), including all-cause death, non-fatal myocardial infarction (MI), and non-fatal cerebral infarction (CI). All data were collected by blinded investigators.



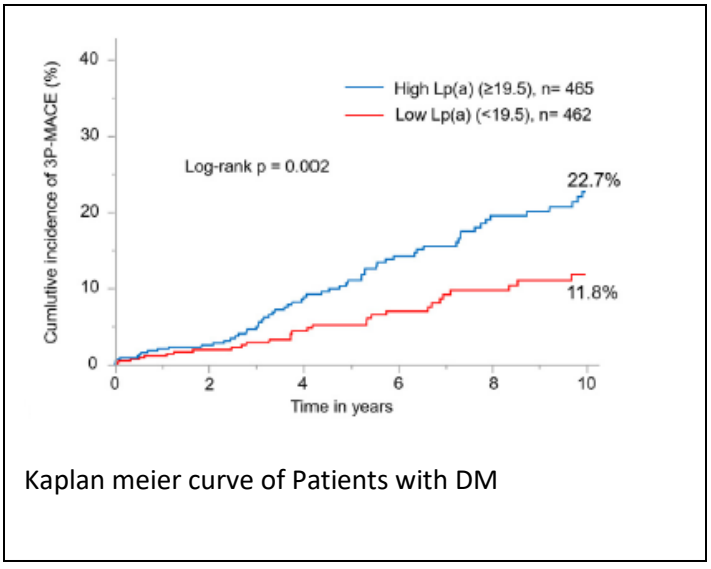
Kaplan meier curve of Patients with non DM

Results:

Baseline characteristics were comparable . It was seen that MACE occurred in 90 cases (17.6%), including 40 (7.9%) cardiac deaths, 18 (3.6%) non-fatal MI, and 37 (7.9%) non-fatal CI over 5 years.

Occurrence of frequency of MACE was significantly higher in the high- Lp(a) group than in the low-Lp(a) group (log-rank test, p = 0.002).

Patients with higher Lp(a) level at the time of PCI was significantly associated with higher frequency of MACE, including other lipid profiles (hazard ratio, 1.91; 95% confidence interval, 1.20–3.09; p = 0.006).



Kaplan meier curve of Patients with DM

Discussion:

In present study, LDL-C levels were significantly higher in the high-Lp (a) group than in the low-Lp(a) group , patients with high Lp(a) showed a significantly higher frequency of MACE than those with low Lp(a), high Lp(a) was

independently associated with poorer long-term clinical outcomes among diabetic CAD patients receiving statins.

Lp(a) is an LDL-like molecule with an apo(a) moiety covalently bound to the apoB component . Lp(a) levels are usually determined by the LPA gene locus and are not significantly affected by diet or environmental factors.

Pathophysiology of Lp(a) is broadly classified into 3 categories: proatherogenic effects of the LDL-like moiety; the proinflammatory effects of the oxidized phospholipid content; and the potentially antifibrinolytic effects of the apo(a) moiety.

As known, Statin therapy targeting LDL-C markedly reduces CVD events in both primary and secondary prevention. [1]

Conclusion:

Lp(a) levels are significantly associated with CVD events, and it could be a residual risk marker among diabetic patients receiving statin therapy after PCI.

Reference:

1)Takahashi N, et al. Prognostic impact of lipoprotein (a) on long-term clinical outcomes in diabetic patients on statin treatment after percutaneous coronary intervention. J Cardiol (2020): 1-5.

2. Coronary spasm with angina in a multiple myeloma patient – A case report

Multiple myeloma, a plasma cell malignancy due to uncontrolled plasma cell proliferation in the bone marrow is treated with combination therapy with proteasome inhibitors (e.g., bortezomib), immunomodulators (e.g., lenalidomide), and dexamethasone.

Even though these drugs have been shown to improve overall survival, adverse cardiovascular events, such as congestive heart failure and venous thromboembolism, have been reported in multiple myeloma patients treated with these drugs.

Current is a case of developing coronary spastic angina during the treatment of multiple myeloma with bortezomib, lenalidomide, and dexamethasone.

Case presentation:

A 80-year-old man was newly diagnosed with multiple myeloma. No cardiac risk factors of smoking, hypertension etc. Patient being a social drinker, which he stopped after the diagnosis of multiple myeloma.

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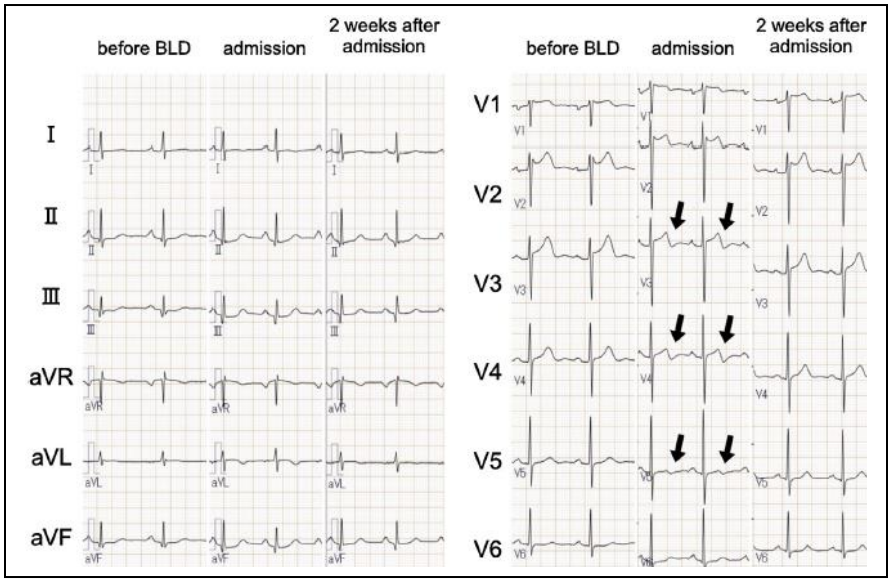
Patient underwent chemotherapy with bortezomib (1.3 mg/m2 on days 1, 4, 8, and 11), lenalidomide (20 mg/day on days 1–14), and dexamethasone combination with a recycling period of 3 weeks (BLD therapy).

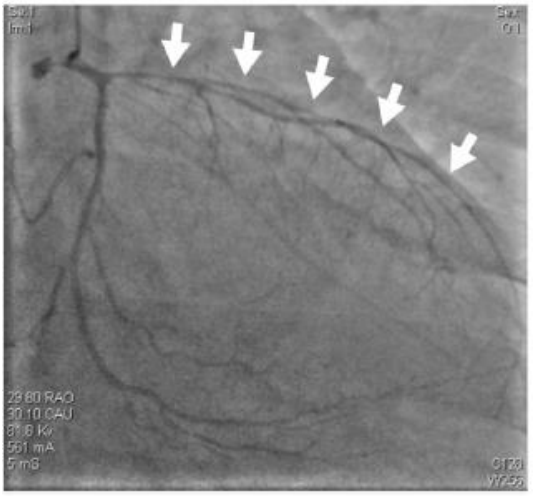
During the 5th day of the fifth cycle of BLD therapy, he was admitted for exertional chest pain when he climbed stairs, pain was relieved by rest but reported 3 episodes in 24 hours.

His serum Troponin I of 0.065 ng/mL (normal: <0.026 ng/mL) levels were elevated, and biphasic T waves in precordial electrocardiogram (ECG) leads as shown in figure .

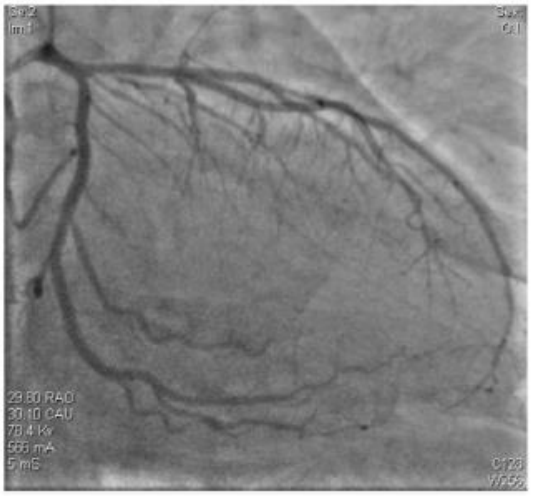


An emergency coronary angiography (CAG) was planned. CAG revealed diffuse spasm in the left coronary artery, especially in the left anterior descending artery, which normalized after intracoronary injection of nitroglycerine. There was no significant stenosis in the right coronary artery.

Patient was diagnosed with coronary spastic angina and benidipine (4 mg, twice daily) was prescribed, with which the patient's symptoms improved and the ECG changes resolved in 2 weeks.



Spasm of left coronary artery



Spasm relieved after intracoronary nitoglycerine injection

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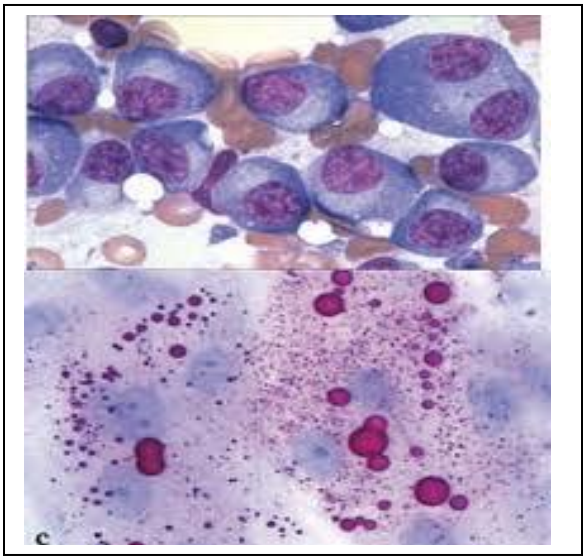
Combination chemotherapy regimen was restarted with BLD therapy was restarted in the outpatient setting. Subsequently he experienced mild chest pain once during sixth BLD therapy cycle which resolved with sublingual nitroglycerin and administration and did not reoccur.
After 7 cycles of BLD, he received high-dose melphalan supported by autologous stem cell transplant and maintenance therapy with lenalidomide.

Discussion:



Multiple myeloma can cause cardiac amyloidosis. Angina occasionally occurs in cardiac amyloidosis patients due to amyloid deposition in intramyocardial arteries with luminal obstruction.
Bortezomib can induce coronary spasm. Proteasome inhibition has been reported to be associated with increased coronary artery oxidative stress , and oxidative stress degrades nitric oxide (NO) and causes vasoconstriction
Even though lenalidomide has not been reported to induce coronary spastic angina, a study reported that lenalidomide inhibited VEGF-induced PI3K-Akt signaling. As endothelial nitric oxide synthase (eNOS) is a downstream target of Akt , lenalidomide might inhibit eNOS activation and reduce NO production.
Dexamethasone can also induce coronary spastic angina. Glucocorticoids sensitize coronary vasoconstriction responses through the activation of Rho-kinase.
In current case, CCBs prevented further angina attacks, and the patient could continue BLD therapy for multiple myeloma.

Reference:

Yasui T et al. Coronary spastic angina in a multiple myeloma patient treated with bortezomib, lenalidomide, and dexamethasone. J Cardiol Cases. 2020;21(5):197-199

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IN FOCUS

3. A new device gets FDA clearance for Cardiac Monitoring in COVID Patients.

A patch can detect changes in the QT interval of hospitalized patients undergoing drug treatment for COVID-19.

Hydroxychloroquine and chloroquine, used to treat fewCOVID-19 patients are associated with risk of prolonged QT interval which can lead to life-threatening arrhythmias. The device helps clinicians to remotely and continuously monitor patients at risk of QT prolongation due to COVID-19 treatment.

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The device apart from serving as a single-lead ECG, it monitors seven other physiological parameters continuously, including body temperature, heart rate, heart rate variability, respiratory rate, and blood oxygen saturation levels. It can also be integrated with third-party devices to monitor blood pressure, weight, and oxygen saturation. It is one such biosensor capable of monitoring so many parameters.

Device can be worn for up to seven days and is powered by a disposable zinc air battery with up to 168 hours of battery life. It measures 120 x 40 mm and is secured to the patient by a hydrocolloid adhesive.

Reference:

Available at : https://www.medgadget.com/2020/05/vitalpatch-wins-fda-emergency-use-authorization-for-cardiac-monitoring-in-covid-patients.html. Accessed on 26-05-2020.