



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

-  ***Interventional outcomes of small coronary vessels.***
-  ***Masked hypotension in congenital heart disease – A case report***
-  ***Super Saturated Oxygen Delivery –New device for MI***

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. Interventional outcomes of small coronary vessels

Percutaneous intervention of Small vessel coronary artery disease is challenging . PCI has a negative impact of restenosis (recoil after balloon angioplasty and neointimal hyperplasia after stent implantation) that significantly increases in small-vessel CAD. Newer drug-eluting stents have significantly reduced the risk for restenosis in patients with CAD, but the efficacy is still poorly understood. Drug –coated balloons (DCBs) have provided a promising therapeutic option in patients for which stent implantation is not desirable like in-stent restenosis which has less evidence. Aim of the current study is to investigate the outcomes of patients with small-vessel CAD undergoing PCI with DCBs or n-DES.

Methods:

An observational, multicenter cohort study including all patients with de novo lesions in small-vessel coronary arteries undergoing elective or urgent or emergent PCI were included. Patients had at least 12-month observation time after PCI. 2 PCI techniques: DCBs and n-DES with different antiproliferative drugs.

Patients treated with old generation drug-eluting stents, bare-metal stents, and uncommon n-DES (<1,000 implantations in SCAAR) were excluded.

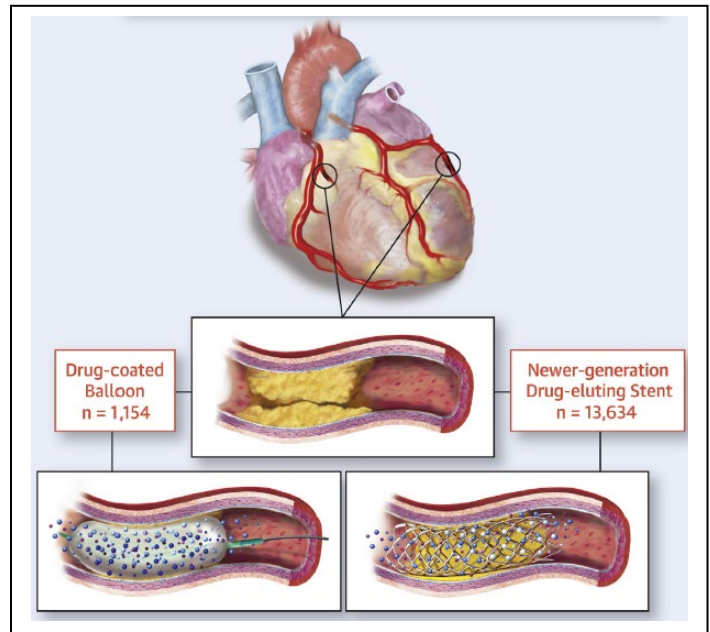


Patients who received n-DES after DCBs (bailout stenting) and patients treated with both DCBs and n-DES in the same procedure. Small-vessel CAD was defined by a device diameter ≤ 2.5 mm

Results:

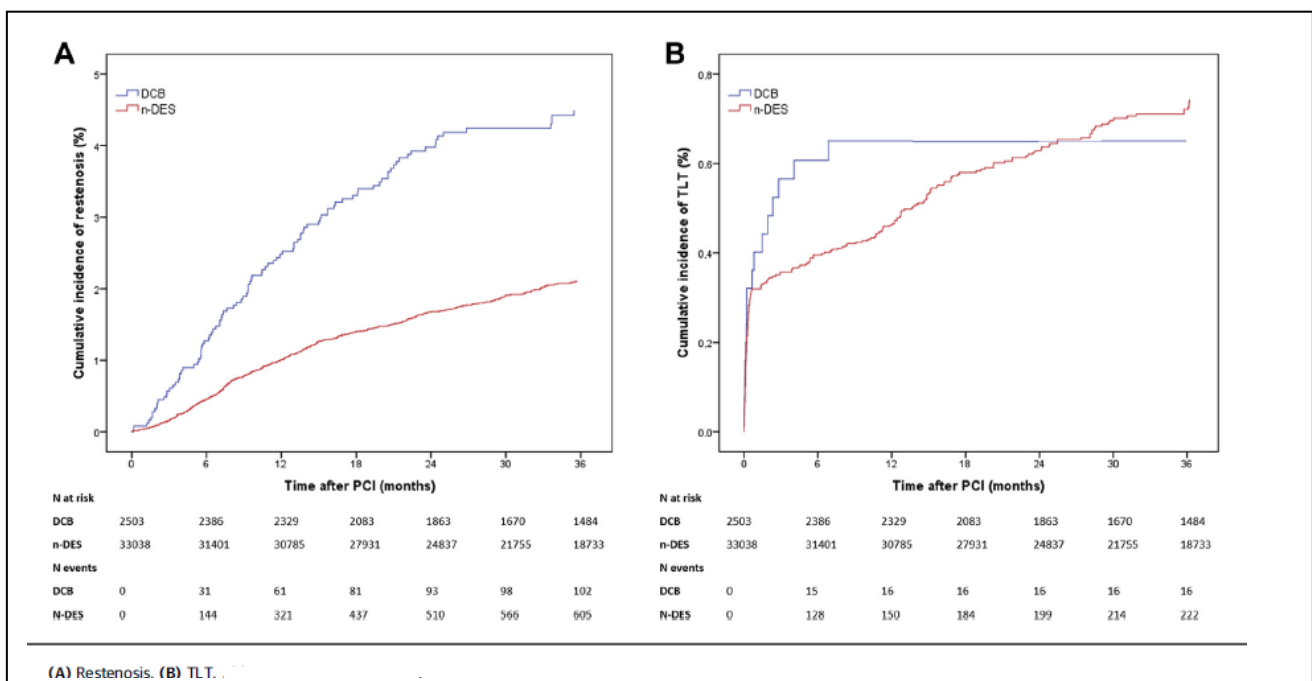
14,788 patients were included in study out of which 1,154 treated with DCBs and 13,634 with n-DES.

The propensity score-adjusted regression analysis showed a significantly higher risk for restenosis in the DCB group compared with the n-DES group (adjusted hazard ratio [HR]: 2.027). Conversely, no difference in the risk for target lesion thrombosis (adjusted HR: 0.741) were detected. The risk for all-cause death (adjusted HR: 1.178) and myocardial infarction (adjusted HR: 1.251) were comparable.



Discussion:

Findings of the study on percutaneous treatment of de novo lesions in small-vessel coronary





arteries are summarized as follows:

1) patients managed with with DCBs showed a higher incidence of clinical risk factors and stable CAD at presentation;

2) n-DES stents were

used more often in

patients with

multivessel CAD and

higher anatomic

complexity

(angiographic type B2/C

lesions and chronic

occlusions) but less

frequently for treatment of bifurcations;

3) after score with DCB treatment was associated with double the risk for restenosis at long-term follow-up compared with n-DES;

4) risk for TLT, MI, DCBs deliver highly lipophilic antiproliferative drug (generally paclitaxel)

to the vessel wall without the need for additional stent layers. This approach allows

repeatability of treatments and justifies more extensive use of DCBs than n-DES observed in

study in patients with previous MI, PCI, or coronary artery bypass grafting

In current study n-DES emerged as the preferred choice for type B2/C lesions and chronic occlusions.

Study results are consistent with those of the PICCOLETO trial, which compared the Dior DCB with Taxus old-generation drug-eluting stents in patients with stable or unstable angina undergoing PCI of coronary vessels < 2.75 mm

Small-vessel CAD is a peculiar for the evaluation of the safety and effectiveness of different PCI techniques. Due to limited ischemic myocardial area, significant restenosis of small coronary arteries, it would have been associated with few or no symptoms.

Conclusion:

DCBs are not a suitable alternative to n-DES for percutaneous treatment of small coronary vessels.

Reference:

Silverio A et al. Percutaneous Treatment and Outcomes of Small Coronary Vessels: A SCAAR Report [published online ahead of print, 2020 Feb 5]. JACC Cardiovasc Interv. 2020;S1936-8798(19)32476-8.

	DCB	n-DES	p Value
Restenosis	102 (4.1)	605 (1.8)	<0.001
TLT	16 (0.6)	222 (0.7)	0.847
Myocardial infarction	100 (8.7)	947 (6.9)	0.029
All-cause death	121 (10.5)	1236 (9.1)	1.109

Values are n (%).

TLT = target lesion thrombosis



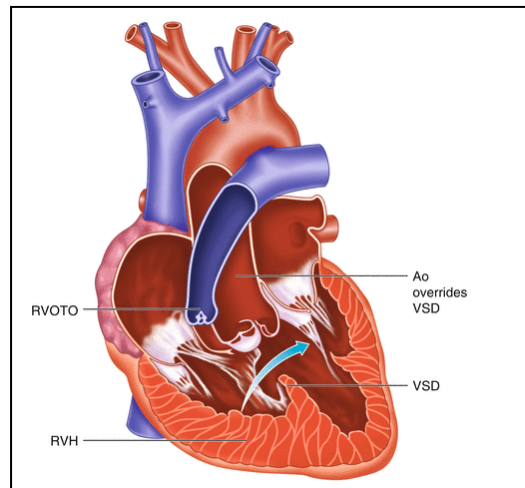
2. Masked hypotension in congenital heart disease – A case report

Tetralogy of fallot , a congenital heart disease that required correction surgically. Here is a presentation of case of altered hemodynamics presented with masked hypotension as a result of elevated intravenous pressure.

Case presentation:

A 67-year-old male with surgically corrected Tetralogy of Fallot presented with fatigue, edema, weight gain, and worsening renal insufficiency. There was marked jugular venous distension, ascites, and edema on examination.

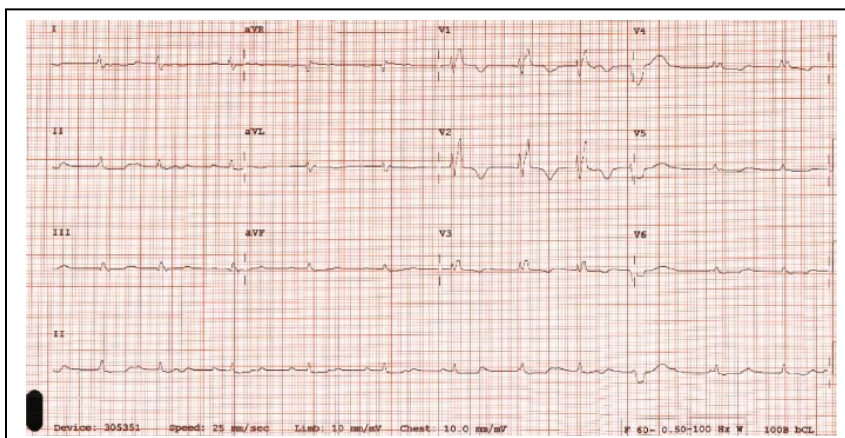
He had undergone complete surgical repair at age 12, a right ventricular outflow tract reconstruction and pulmonary valve replacement at age 50, and a percutaneous pulmonary valve replacement at age 64. Few months prior to admission, the patient exhibited worsening signs and symptoms of volume overload requiring escalating diuretic doses. Prior to admission, a cardiac MRI demonstrated marked biatrial enlargement, right ventricular dilation and dysfunction, and moderate pulmonary and tricuspid regurgitation. An echocardiogram on admission demonstrated right ventricular dilation with an estimated right ventricular systolic pressure of 54 mmHg, moderate tricuspid regurgitation, and mild



pulmonary conduit stenosis.

Electrocardiogram at the time of admission revealed sinus rhythm with a stable right bundle branch block .

The patient was diagnosed for decompensated right heart failure. MAP was 64mmHg, and CVP was





markedly elevated at 27 mmHg. He was started on intravenous diuretics and dopamine and successfully diuresed over 12 days to a negative fluid balance of 16.5 L with an improvement in renal function .

After discharge, on fourth day the patient was readmitted with frank hypotension, hyperkalemia, and oliguric renal failure. Dopamine infusion was resumed with improvement in renal function and urine output. Attempts to wean the dopamine were associated with dramatic drops in blood pressure and oliguric renal failure. Simultaneous right and left heart catheterization performed off dopamine surprisingly demonstrated elevated CO and low SVR consistent with distributive shock .

Additionally, the patient was noted to have concordance of ventricular pressures that suggested of restrictive physiology.

The pulmonary artery catheter was left in place, and subsequent measurements were made once the patient was placed back on dopamine .

After dopamine failed on weaning, a phenylephrine infusion was started. He was subsequently converted to oral phenylephrine and midodrine with stable hemodynamics, urine output, and renal function.

After three weeks of discharge , patient was stable and reported good exercise tolerance and urine output, with a stable creatinine.

Discussion:

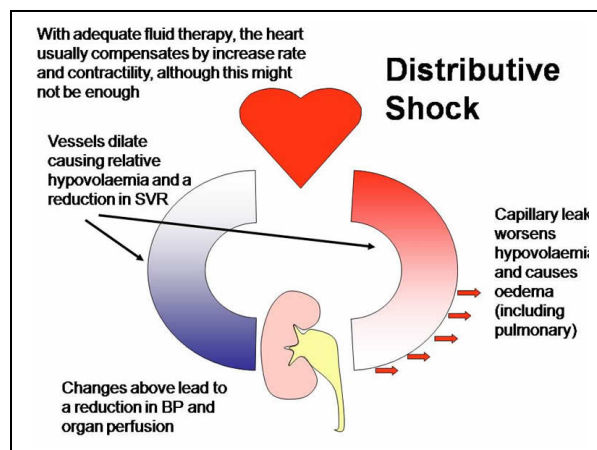
patient's history and clinical features suggested decompensated right heart failure. Therapy was initiated with diuretics and dopamine leading to improved symptoms and renal function. After dopamine withdrawal , patient abruptly decompensated with hypotension and renal failure, a pulmonary artery catheterization led to the unexpected finding of high-output cardiac failure, low SVR, and a diagnosis of distributive shock.

Markedly elevated CVP not only contributed to poor renal perfusion but also impeded the diagnosis of distributive shock in this patient.

Chronic high-output cardiac failure, characterized by an elevated CO and central venous congestion.

Shunts are common in patients with adult congenital heart disease, but none was detected on catheterization. Other causes of distributive shock, including adrenal insufficiency, thyrotoxicosis, and sepsis, were excluded.

Patients with adult congenital heart disease has been reported to exhibit elevated levels of





endotoxin, which potentially could have contributed to low SVR in patient. Unique physiology of patient highlights the challenge in managing adults with congenital heart disease; in addition to cardiac disease, these patients have significantly elevated rates of extracardiac organ dysfunction compared to the general population

Conclusion:

A case of distributive shock (masked hypotension) concealed by markedly elevated CVP in a patient with complex adult congenital heart disease was successfully managed

Reference:

Rigger W et al. Masked Hypotension due to Elevated Venous Pressure in a Patient with Complex Adult Congenital Heart Disease. Case Reports in Cardiology. 2020; 7148708;1-4

3. Super Saturated Oxygen Delivery –new device for MI

A latest product received US FDA approval. The product delivers Super Saturated Oxygen (SSO₂) therapy to limit myocardial loss following chronic total obstruction of left anterior descending ST-elevation myocardial infarction (LAD STEMI)

This new system is used after blood flow is restored during angioplasty and stent implantation to pump hyperbaric levels of oxygen straightly into injured cardiac tissue. Better results are obtained within six hours of the onset of symptoms.

Super saturated O₂ Therapy is used for treatment for LAD STEMI patients that results in a reduction in infarct size and improved left ventricular function in a predictable way. This can help for heart failure prevention and patient survival.¹

Prospective clinical trials have shown that Super saturated O₂ Therapy leads to smaller infarcts in widowmaker patients, which correlates with improved ventricular function, lower mortality, and less chance of heart failure.²



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References:

- 1) Available at: <https://www.medgadget.com/2020/04/next-gen-therox-supersaturated-oxygen-delivery-system-fda-approved.html>. Accessed on 07-04-2020
- 2) Stone GW et al. Effect of supersaturated oxygen delivery on infarct size after percutaneous coronary intervention in acute myocardial infarction. Circ Cardiovasc Interv. 2009;2(5):366–375.



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