

CARDIOMAG NEWSLETTER

Volume 3| Issue 33| 2022

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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

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- Evaluation of the prognostic implications of Left atrial spontaneous echo contrast with the catheter ablation of non valvular AF patients with left atrial dilation
- Elevated cardiac troponin I (cTnI) levels before non-cardiac surgery in patients with end stage renal disease undergoing dialysis
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Determination of the frequency and clinical impact of new ischemic lesions detected with diffusion-weighted-imaging-MRI (DWI-MRI) after carotid artery stenting

Symptomatic carotid stenosis also known as stenosis of the internal carotid artery (ICA) may shows symptoms of amaurosis fugax, transient ischemic attacks or acute ischemic stroke (AIS) ipsilateral to the lesion and carries a higher chances of early recurrence and stroke, for which carotid revascularization is recommended.¹ However, degree of stenosis differs among the major study analysing the treatment of carotid stenosis, but severe stenosis i.e. 70–99% has been linked to have highest risk for recurrent stroke or TIA. Treatment options for symptomatic carotid stenosis differs based on location of the stenosis i.e. extracranial vs. intracranial.² Few studies comparing carotid endarterectomy (CEA) and carotid artery stenting (CAS) have highlighted the greater chances of stroke with carotid artery stenting compared to carotid endarterectomy. Therefore, development and modification has been done in carotid artery stenting to treat symptomatic carotid and is often chosen for anatomic reasons for patients with high surgical risk or with severe medical comorbidities¹

Hak JF aimed to study the frequency and clinical impact of new ischemic lesions detected with diffusion-weighted-imaging-MRI (DWI-MRI) along with the clinical outcomes after carotid artery stenting (CAS) using simple flow blockage technique (SFB). This retrospective study extracted data from a monocentric prospective clinical registry of consecutive patients admitted for symptomatic cervical ICA stenosis. Almost 82 patients were enrolled from the time periods between January 2017 to September 2019. Of the enrolled patients, 78 had symptomatic carotid artery atherosclerotic stenosis and 4 symptomatic web treated by carotid artery stenting using the simple flow blockage technique and benefited from a DWI-MRI before and within 48 h of the stenting procedure. According to univariate analysis, among the 33 patients with new DWI-MRI ischemic lesions, 30 patients were found to be asymptomatic. However, 13 patients had irregular carotid plaque surface with or without ulceration and were associated with higher rates of new DWI-MRI lesions compared to patients with a regular plaque. No acute coronary syndrome was noted and the 30-day composite endpoint was seen in 3 patients.

This study concluded that less than half of the carotid artery stenting cohort using the simple flow blockage technique technique had new ischemic lesions detected with DWI-MRI. Of these patients, almost 90% were found to be asymptomatic and irregularity of the plaque was observed to increase the risk of peri-procedural DWI-MRI lesions.

Outcomes	n (%)	95%CI
DWI-MRI new lesions		
Patients with ≥ 1 lesions	33 (40.2)	29.5 to 51.7
Single	11 (13.4)	
Multiple	22 (26.8)	
Patients with punctiform lesions	31 (37.8)	27.3 to 49.2
Patients with ipsilateral lesions	31 (37.8)	27.3 to 49.2
Patients with contralateral lesions	8 (9.8)	4.3 to 18.3
Patients with lesions > 10 mm	7 (8.5)	3.5 to 16.8
Clinical outcomes		
Composite endpoint at 30 days of intervention	3 (3.7)	1.3 to 12.0
Death	1 (1.2)	
Acute coronary syndrome	0 (0.0)	
Symptomatic ischemic stroke	3 (3.7)	
≥ 1 Bleeding event	1 (1.2)	
≥ 1 procedural complications	3 (3.7)	1.3 to 12.0
Cerebral emboli	3 (3.7)	
Groin hematoma	0 (0.0)	
Dissection	0 (0.0)	

Figure 1: DWI-MRI new lesions and clinical outcomes in 82 patients with symptomatic carotid stenosis >50% or symptomatic web treated by CAS using SFB

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Evaluation of the prognostic implications of Left atrial spontaneous echo contrast with the catheter ablation of non valvular AF patients with left atrial dilation.

In patients with left atrial (LA) dilation, left atrial spontaneous echo contrast (LASEC) can be detected by transesophageal echocardiography (TEE) prior to the catheter ablation of atrial fibrillation (AF). In atrial fibrillation patients after the procedure, left atrial dilation is a well-established risk factor for predicting outcomes. Increase in the size of left atrial leads to a higher recurrence rate of atrial fibrillation treated with ablation. However, not all atrial fibrillation patients with LA dilation develops left atrial spontaneous echo contrast during transesophageal echocardiography.¹ However, another study by Gedikli et al. highlighted that the presence of dense LA SEC did not show any correlation with periprocedural thromboembolic events in patients with atrial fibrillation undergoing catheter ablation with uninterrupted anticoagulation. But, a significant association was observed with late stroke/transient ischemic attack (TIA).² Therefore, Lin C et al aimed to investigate if the left atrial spontaneous echo contrast may be of prognostic value in patients with atrial fibrillation with Left Atrial dilation.

This prospective study enrolled 123 patients with Atrial fibrillation scheduled to undergo catheter ablation. Enrolled patients were then divided into two groups: LASEC group (73 patients) and no LASEC group (50 patients). In both groups, baseline patient characteristics were found to be similar. Before performing the procedure, enrolled patients underwent transesophageal echocardiography. Primary endpoint of this study was atrial fibrillation or atrial tachycardia recurrence-free survival after 3-month of catheter ablation. patients were followed up for 18 months. Transesophageal echocardiography was conducted to exclude left atrial thrombus before catheter ablation for atrial fibrillation and was performed under local anaesthesia, with continuous monitoring of blood pressure and oximetry (Fig 2)

At the end of 18 months of follow-up, atrial fibrillation or atrial tachycardia recurrence-free survival was achieved in 33 patients in the left atrial spontaneous echo contrast group and in 34 patients in the no LASEC groups, respectively. Survival analysis revealed that the LASEC group was associated with a poor outcome of catheter ablation. During the follow-up atrial fibrillation or atrial tachycardia recurrence was observed in 30 patients in the mild SEC group and in 15 patients in severe SEC groups. In the left atrial spontaneous echo contrast group, 2 patients had Ischemic stroke



Figure 2: Representative echocardiogram of LASEC. (A) No LASEC was detected by TEE. (B) LASEC (arrow) was revealed by TEE. V stands for left side, numbers 0 and 44 stand for imaging

This study concluded that in atrial fibrillation patients with left atrial dilation, left atrial spontaneous echo contrast (LASEC) could be a predictor of the recurrence of atrial fibrillation or atrial tachycardia after catheter ablation. This study also highlighted that the higher the degree of left atrial spontaneous echo contrast, the worse the prognosis is.

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Elevated cardiac troponin I (cTnI) levels before non-cardiac surgery in patients with end stage renal disease undergoing dialysis

Compared to patient without CKD, Patients with chronic kidney disease (CKD) have a higher risk of cardiovascular (CV) disease as CKD increases the risk of arteriosclerosis progression. On the other hand, most patients with CKD have comorbidities like hypertension and diabetes mellitus which increases the chances of CV disease. Elevated level of serum cardiac troponin I (cTnI) have been used while diagnosing myocardial infarction and predicting the risk of cardiac events.¹ Cardiac troponin I also known as a contractile protein is located within myocyte is a diagnostic test of stress on the heart which is closely related to perioperative mortality. Newer generation cardiac troponin test with high sensitivity decreases the number of potentially missed coronary artery disease patients and increases prognosis in those disease that do not originate in the coronary arteries including congestive heart failure, pulmonary embolism and chronic kidney disease.² According to studies, serum cTnI levels also increases during myocardial wall distension due to volume and pressure overload. Therefore, when cardiac troponin I levels gets increased in CKD patients, especially undergoing dialysis, it becomes difficult to interpret whether this is due to MI or CKD.¹

Park BE et al aimed to investigate if elevated cardiac troponin I (cTnI) serum levels before non-cardiac surgery were predictors of postoperative cardiac events in patients with end stage renal disease undergoing dialysis. To conduct this study, 703 patients with end stage renal disease undergoing dialysis who underwent non-cardiac surgery were included. cTnI serum levels were measured prior to the procedure in all patients. Composite of cardiac death, myocardial infarction (MI), and pulmonary oedema during hospitalization or within 30 days after surgery in patients with a hospitalization longer than 30 days after surgery were the primary endpoint.

Result of this study showed that Postoperative cardiac events occurred in 6.8% patients. Diabetes mellitus, previous ischemic heart disease, and congestive heart failure were more common in patients with postoperative cardiac events. Higher Peak cTnI serum levels were seen in patients with postoperative cardiac event. Even in patients with postoperative cardiac events, elevated peak cTnI levels > 45 ng/L were commonly observed. According to Multivariate logistic regression analysis, Diabetes mellitus and serum peak cTnI levels ≥ 45 ng/L were independent predictors for the primary outcome of cardiac death, MI and pulmonary oedema. Also, cTnI levels ≥ 45 ng/L showed increased prognosis to the revised cardiac risk index and to the combined revised cardiac risk index and left ventricular ejection fraction

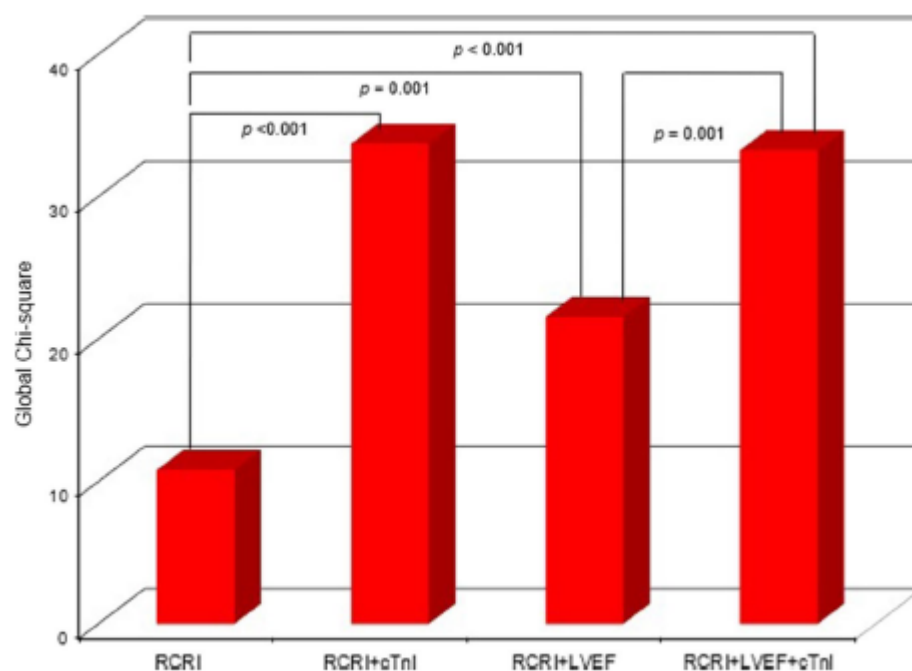


Figure 3: Incremental prognostic value of sequential RCRI, cTnI, and LVEF. Global Chi-square on the Y axis indicates the incremental prognostic value of sequential RCRI, cTnI, and LVEF. RCRI revised cardiac risk index; cTnI cardiac troponin I; LVEF left ventricular ejection fraction

This study concluded that increased level of preoperative cTnI are predictors of postoperative cardiac events, including cardiac death, MI, and pulmonary oedema in patients with end stage renal disease undergoing non-cardiac surgery. Thus, measurement of cTnI from relatively easy blood tests may be helpful for the clinicians to assess the postoperative cardiac risks events in patients with end stage renal disease

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A Case Report of Abdominal Pregnancy associated with Severe Preeclampsia

Abdominal pregnancy is defined as the implantation in the peritoneal cavity, exclusive of tubal, ovarian, or intraligamentary implantations. Abdominal pregnancy is also characterized as a potentially life-threatening form of ectopic pregnancy. Abdominal pregnancy seldom reaches late gestation, and the occurrence of a live foetus is mostly uncommon. Due to poor foetal prognosis and an increased risk of maternal mortality, majority of pregnancies are terminated early.¹ Abdominal pregnancy may cause 1.4% of all ectopic pregnancies. Incidence rate of abdominal pregnancy varies according to clinical studies and ranges between 1:10,000 pregnancies to 1: 30,000 pregnancies.² To diagnose abdominal pregnancy accurately, a strong index of suspicion is necessary. According to studies, abdominal pregnancies are fatal due to the risk of massive haemorrhage from a partially or totally separated placenta at any stage of Pregnancy.¹

Musalli F A reported a case of 24-year-old unbooked primigravida with 40 weeks' post-date and a spontaneous conception. During admission Patient has symptoms of severe pre-eclampsia such as headache, vomiting, high blood pressure, blurred vision, and swelling of the feet, ankles, face, and hands. Patient also complaint of having experienced diffuse abdominal pain and recurrent vaginal spotting followed by nausea and loss of appetite for two days. Physical examination revealed blood pressure of 190/110 mmHg, a pulse rate of 94 b/m, temperature of 37°C, respiratory rate of 20 minutes, and SPO2 of 97% on room air. On abdominal examination, abdomen was found to be enlarged, soft on palpation, moderately tender without protective muscle tension. On auscultation, no clear border of the uterus was found and no signs of uterine contraction was noted. Positive foetal heartbeat was 150b/m.

Elevated BP was managed with magnesium sulphate and labetalol and emergency caesarean section was planned. Later, ultrasound was performed which revealed a single intra-abdominal viable pregnancy with a gestational age of 37+ with an empty uterus, fluid inside the cul-de-sac, and an expected foetal weight of 2.8 kg and a biophysical profile of 6/8 with decreased liquor. Doppler evaluation revealed the vascularization of uterine fundus. However, no tissues were observed between the anterior abdominal wall and parts of the foetus. Doppler measurements also revealed a 12 × 10 cm formation in the right uterine appendage area with

intense blood flow. Though signs of amniotic fluid were not seen but a small amount of peritoneal fluid was observed in the left pericolic pocket and was diagnosed with a progressive abdominal pregnancy.

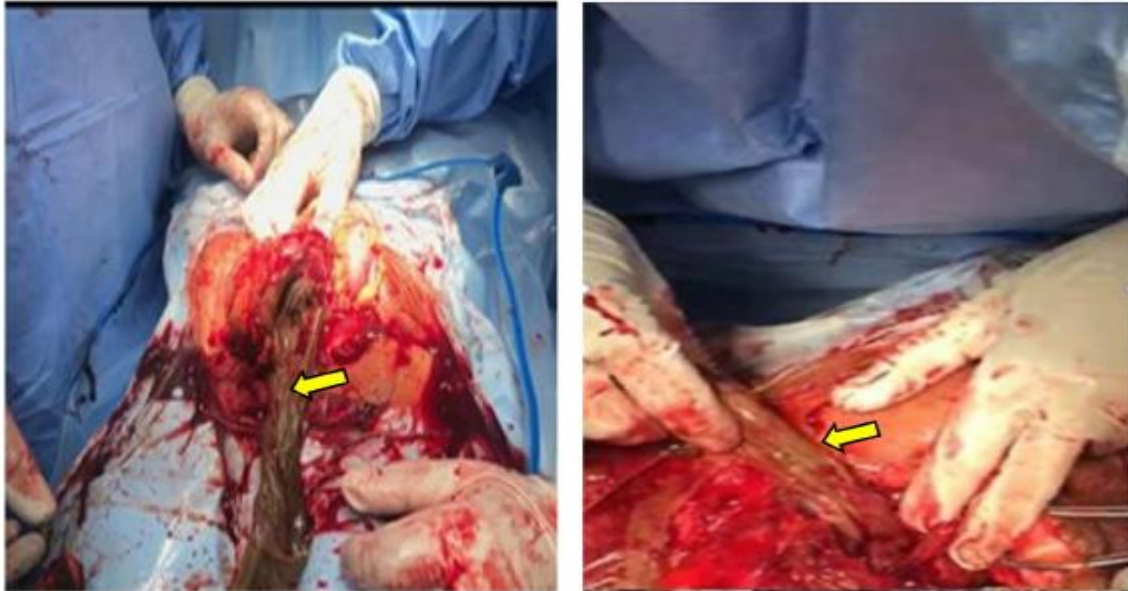


Figure 4: The umbilical cord emerges from the abdominal cavity

After obtaining patient's informed consent for CS, access was made through a mid-umbilical incision, intraoperatively. Uterus was found empty, and the placenta was adherent to the bowel and completely removed about 4 litres of blood. A live male foetus stained with meconium weighed 2.6 kg was freely removed from the abdominal cavity. Apgar score of the male foetus was between 7 and 9 points. No major birth defects were found.

This study concluded that abdominal pregnancy is a rare ectopic pregnancy that requires high clinical suspicion, quick detection and immediate management to avoid maternal morbidity and mortality. Prevention of Abdominal pregnancy can be done by avoiding miscarriage and treating adhesions and chronic inflammatory diseases.

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