Reviewer's report:

Kojuri et al. submitted their manuscript: “Clinical significance of retinal emboli during diagnostic and therapeutic cardiac catheterization” for review to BMC Cardiovascular Disorders.

The purpose of the study was to describe the incidence of clinically silent and apparent retinal emboli following diagnostic and interventional coronary catheterization and associated risk factors.

The authors studied 300 patients attending for diagnostic and therapeutic cardiac catheterization. Direct retinal examination and examination of the visual field and acuity were done before and after catheterization by a retinal specialist. There was 5 case of retinal embolus before catheterization, and 19 patients (incidence 6.3%) developed new retinal arteriolar emboli after catheterization.

This is a nice study from Iran investigating the incidence of retinal emboli. I have to make 3 comments:

1.) page 3” Cholesterol emboli during catheterization are thought to be caused by the disruption of a vascular plaque..” Please define Cholesterol emboli in great detail. See also: Retinal arteriolar emboli are generally believed as discrete plaque-like lesions lodged in the lumen of the retinal arterioles or at bifurcations composed of fibrin-platelet aggregates, cholesterol fragments, or particles of calcified valves. They predominantly originate from an ulcerated atheromatous carotid artery or ascending aorta plaque, calcified cardiac valves, or mural internal carotid thrombus, respectively and may be classified as cholesterol (reflective or refractile), fibrin-platelet (dull or nonreflective) or calcific (chalky white) emboli figure [1]. Calcific retinal embolism (CRE) is a rare cause of visual loss that is predominantly caused by embolism from calcified cardiac valves, particularly calcific aortic valve stenosis.

2.) “300 patients who underwent diagnostic (n=150) or therapeutic coronary catheterization (n=150) were included in our study.” Was this a prospective study? Why are the numbers of patients exactly equal in both groups? Please define.

3.) Eye examination We did not use funduscopic examination because we felt it lacked sensitivity.” A clear definition of the examination is missing. Which technique direct vs. indirect ophthalmoscopy was used? What was the dioptre or
magnification of the lens?
Retinal emboli may be small? Angiography demonstrate even smaller particles. How did you avoid to miss occult particles? How did you differentiate different types?

Page 3: Ophthalmic artery please correct

Page 14: “…incidence of retinal emboli after coronary catheterization after”. Take out “after”

Image: please put an arrow on the visible emboli

Reference: 2 recent papers may be included:

Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
'I declare that I have no competing interests' CHM