How valid was the NEJM EXCEL study?

Re: New England Journal of Medicine reviews controversial stent study **Deborah Cohen, Ed Brown.** 368:doi **10.1136/bmj.m878**

Since publication of the EXCEL study last year in the NEJM [1], there has been considerable discussion over the outcomes and potential conflicts associated with the study itself. Given multiple publications over decades, which have demonstrated lower morbidity and mortality associated with coronary artery bypass graft (CABG) surgery versus medical treatment or percutaneous intervention (PCI) with significant coronary lumen disease (CLD) in cases of either left main (LM) or triple vessel coronary artery disease (CAD) - beginning with the CASS [2] publication through the study in JACC [3] - one has to wonder how such a study got published [4-6].

Above and beyond the criticisms, which have been discussed since the publication of EXCEL, is the question of determining what constitutes sufficient coronary artery disease (CAD) requiring intervention [7-10]. As shown in 1991 [7], physician interpretation of the extent of CLD resulted in the overestimation of CLD with > 50% diameter stenosis (DS) narrowing and underestimating the extent of CAD when CLD was interpreted as being < 50% DS. The consequence of this error in physician interpretation of the extent of CLD was a statistically significant over estimation of the outcome of PCI. Also noted [7] was a statistical increase in the tendency for physicians to declare triple vessel disease versus single or double vessel disease.

The outcome of this continued use of visual interpretation of CLD to define CAD is flawed given our understanding that CAD is an inflammatory process beginning within the walls of the coronary arteries [11], consequently impairing coronary blood flow [10], resulting in angina [12-14] and death. Coupling a flawed method for qualitatively determining if someone has sufficient coronary artery disease requiring intervention, and their outcomes of treatment – either CABG, PCI or medical - with the other problems associated with the EXCEL study is not acceptable in 2020, particularly when CMS, ASNC and the SNMMI, in addition to other medical societies are calling for quantification methods, which eliminate these errors [15].

Publishing a paper with potential – serious or otherwise - consequences impacting patient health [4-6] without addressing critical errors in the methods used to assess patient outcomes raises serious questions regarding data validity – both intentional [5] and unintentional [4-6].

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Competing interests: FMTVDM is issued to first author. First author, authored the Inflammation and Heart Disease and Angina Theories.