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## Letter to the Editor

### Reply to letter: What is the meaning of “early CAG”?

Sir,

We would like to thank Dr Tang and Dr Zhou for showing interest in our article “Gender differences in utilization of coronary angiography and angiographic findings after out-of-hospital cardiac arrest: A registry study”.<sup>1</sup> They do however express some concerns.

Due to limitations in our register data we had to define early coronary angiography (CAG) as CAG performed during the same day as the arrest. By this, Dr Tang and Dr Zhou believe we missed the recommended time limit for early CAG.<sup>2</sup> We share this belief, why for transparency we described our definition in the methods section to avoid unnecessary misconceptions.

Second, we performed a multivariable analysis investigating the impact of gender on utilization of early CAG while controlling for confounding variables. Dr Tang and Dr Zhou raises concerns over the interaction between age and gender. This concern is based on previous results showing a possible hormonal effect leading to survival benefits for women in childbearing age.<sup>3</sup> We admit that it would be possible to make an interaction analysis in our study to investigate the interaction between age and gender, but we do not intuitively see the interaction between a possible hormonal effect and referral to CAG. Furthermore, the excellent study by Morrison and colleagues that they refer to explicitly state that age-gender interactions did not reach statistical significance. Hence the nominally significant finding in the subgroup of younger women must be interpreted with caution.

Also, in the group without ST-elevation we found previously known ischaemic heart disease being associated with lower use of early CAG. Dr Tang and Dr Zhou find this surprising since a previous study by Lam et al.<sup>4</sup> found the opposite. Lam and colleagues investigated a very different population than ours. In their study 43% of the patients presented with ventricular fibrillation/ventricular tachycardia (VF/VT) and over 40% of the patients had a non-cardiac origin of the arrest. Unfortunately, we could not tell the proportion of arrests with non-cardiac aetiology why we included only patients with VF/VT in order to study a population with an expected high proportion of arrests of cardiac origin. Furthermore, in their study 17% had ST-elevation and 12% were awake after return of spontaneous circulation, which differ from our population. We believe these differences may affect the different findings. We do however admit that factors like myocardial injury markers or do-not-resuscitate orders would make the analysis even more accurate, but unfortunately we lack this information. Lastly,

we investigated the association between gender and early CAG, and secondary findings like ischaemic heart disease in this case, should be interpreted cautiously due to multiplicity.

#### Conflicts of interest

None.

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