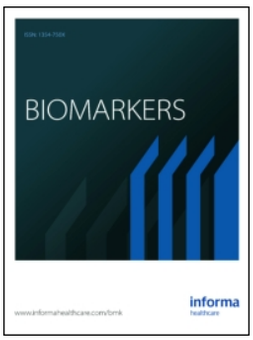

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Copeptin level differentiates takotsubo cardiomyopathy from acute myocardial infarction

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Abstract

Serum concentration of copeptin has a prognostic value in several clinical conditions, including myocardial infarction, stroke, pneumonia or chronic obstructive pulmonary disease. We attempted to conduct a systematic review and meta-analysis to answer the question whether copeptin can be used as a parameter differentiating between takotsubo cardiomyopathy (TTC) and acute myocardial infarction (AMI). We performed a metaanalysis of four studies including 109 patients with TTC and 120 patients with AMI, which showed lower levels of copeptin in the TTC group, compared with the AMI group (MD = -26.60; 95% CI: -48.55, -4.65; P = 0.02). Whether TTC could be a biomarker to differentiate TTC from AMI, remains to be established.

To the Editor,

We read with great interest the article “Biomarkers in patients with takotsubo cardiomyopathy compared to patients with acute anterior ST-elevation myocardial infarction” by Højagergaard et al, where the authors found that patients with takotsubo cardiomyopathy (TTC) had lower copeptin concentrations compared to acute myocardial infarction (AMI) patients [1].

Copeptin is a fragment of the arginine vasopressin (AVP) precursor, which is released during hemodynamically endogenous stress and plays a role in the formation of the pre-pro-vasopressin, necessary for the proper vasopressin maturation [2]. In healthy adults, serum copeptin levels range from 1 to 12 pmol/l. Copeptin is being intensively studied as a potential marker of increased cardiovascular risk [3]. Serum concentration of copeptin has a prognostic value in several clinical conditions, including myocardial infarction, stroke, pneumonia or chronic obstructive pulmonary disease [3,4]. We attempted to conduct a systematic review and meta-analysis to answer the question whether copeptin can be used as a parameter differentiating between TTC and AMI.

Two authors (L.S. and A.G.) searched the electronic resources (PubMed, Embase, Cochrane and gray literature) until 20 December 2020, using the following query: “copeptin” AND „takotsubo cardiomyopathy” OR “takotsubo syndrome” OR „stress cardiomyopathy” OR „apical ballooning syndrome” OR „broken heart syndrome” AND “acute myocardial infarction”. No language or publication date restrictions were imposed. All results are presented as mean difference (MD) with 95% confidence interval (CI). $P < 0.05$ for two-tailed statistical testing was considered statistically significant.

The PRISMA diagram is showed in Figure 1. Eventually, four studies including 109 patients with TTC and 120 patients with AMI were included in the meta-analysis [1,5–7]. Pooled analysis showed statistically significant lower levels of copeptin in the TTC group, compared with the AMI group (MD = -26.60; 95% CI: -48.55, -4.65; P = 0.02; Figure 1).

In summary, our meta-analysis showed that patients with TTC have lower serum concentrations of copeptin, compared to patients with AMI, implying that TTC patients are hemodynamically more stable than patients with AMI. Whether TTC could be a biomarker to differentiate TTC from AMI, remains to be established.

Figure 1. PRISMA diagram including the number of records identified, included and excluded, and the reasons for exclusions.

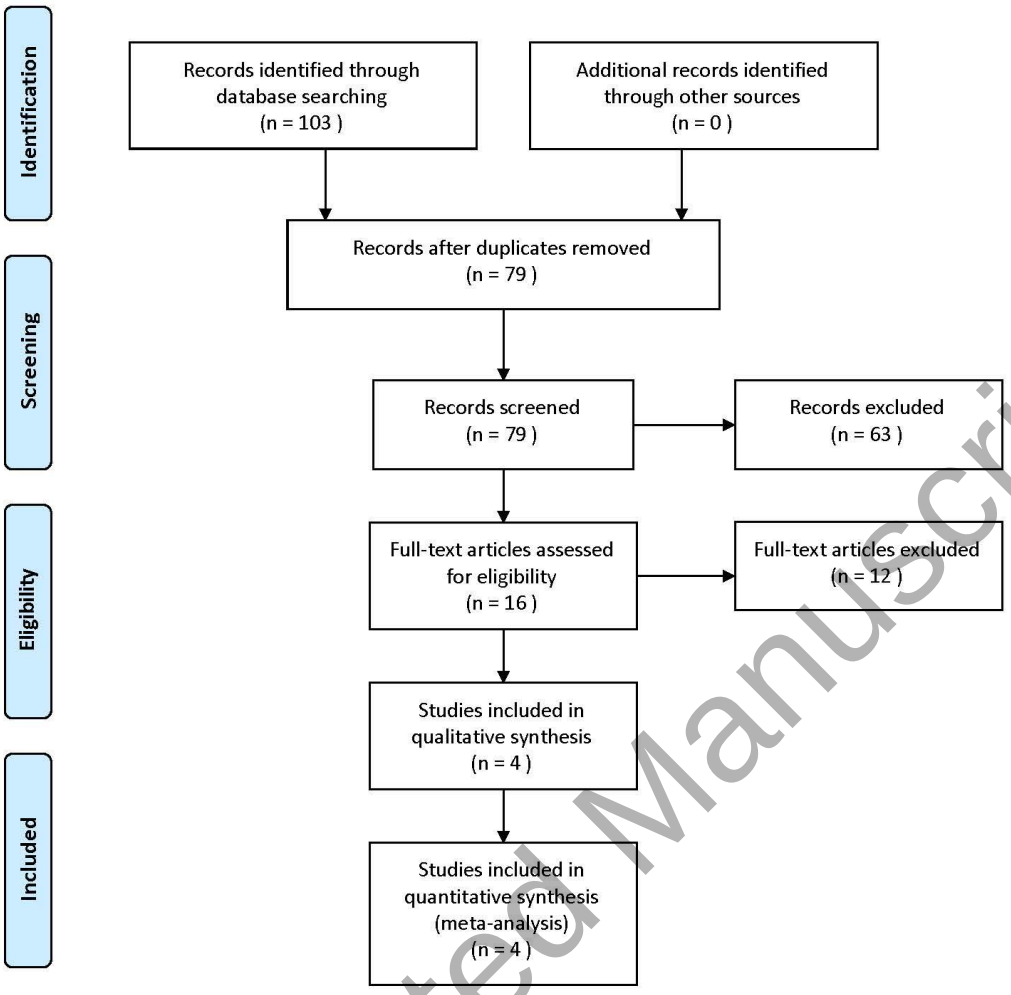
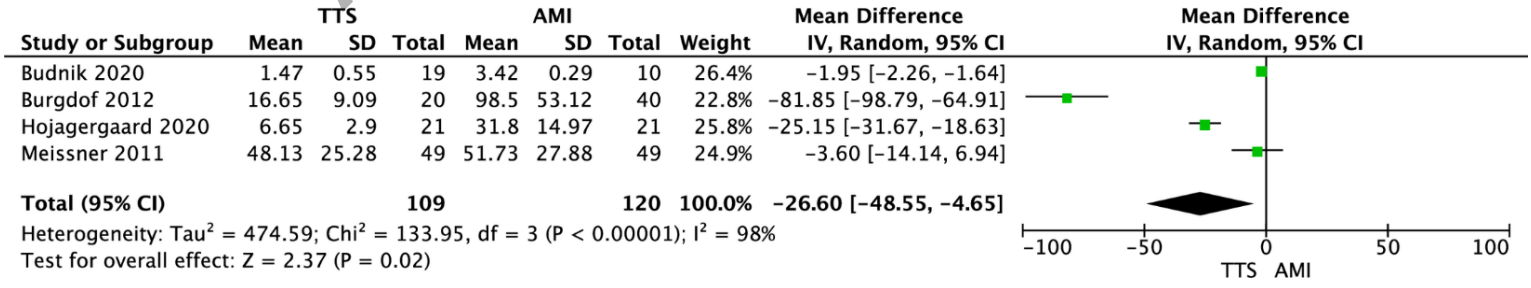


Figure 2. Forest plot of copeptin level in takotsubo syndrome (TTS) vs. acute myocardial infarction (AMI) group. The center of each square represents the weighted mean differences for individual trials, and the corresponding horizontal line stands for a 95% confidence interval. The diamonds represent pooled results.



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