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Effect of metformin on all-cause and cardiovascular mortality in patients with coronary artery diseases: a systematic review and an updated meta-analysis


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indicator of acute myocardial impairment and is often used as an auxiliary diagnostic tool for acute myocardial infarction (AMI). An analysis was then carried out to explore the effect of metformin on the reduction of CK-MB. In this comparison, we reviewed five studies, all of which observed that the mean value of CK-MB in the metformin trials was lower than that in the non-metformin trials, but four studies had no statistical significance. The pooled standard mean difference (SMD) of CK-MB is -0.15 [$-0.29, -0.01$], ($P = 0.04$); $I^2 = 52\%$, suggesting that metformin could reduce CK-MB (Fig. [6b](#)).

Type B natriuretic peptide (BNP) is a widely used biomarker for cardiac function and is mainly found in heart ventricle. Increased ventricular volume and pressure can lead to increased plasma BNP, which reflects the change of left ventricular function. **BNP is often used to assist in the diagnosis of heart failure and to determine the severity and prognosis of the condition.** So, we analyzed the effect of metformin on BNP. four studies were included in the BNP comparison. 3 studies observed the mean value of BNP in the metformin group was lower than that in the control group. 1 study found the opposite. This comparison revealed insignificant result (SMD -0.02 ; 95% CI $0.15-0.12$; $P = 0.8$) (Fig. [6c](#)). The heterogeneity was 0 ($I^2 = 0\%$), a fixed effect model was used. 4 studies, though had different measures of effect indexes, all pointed to the same cardiac function, so SMD was used instead of MD.

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