

Prognostic Value of Electrocardiographic Abnormalities in Immune Checkpoint Inhibitor–Associated Myocarditis: A Systematic Review and Meta-analysis

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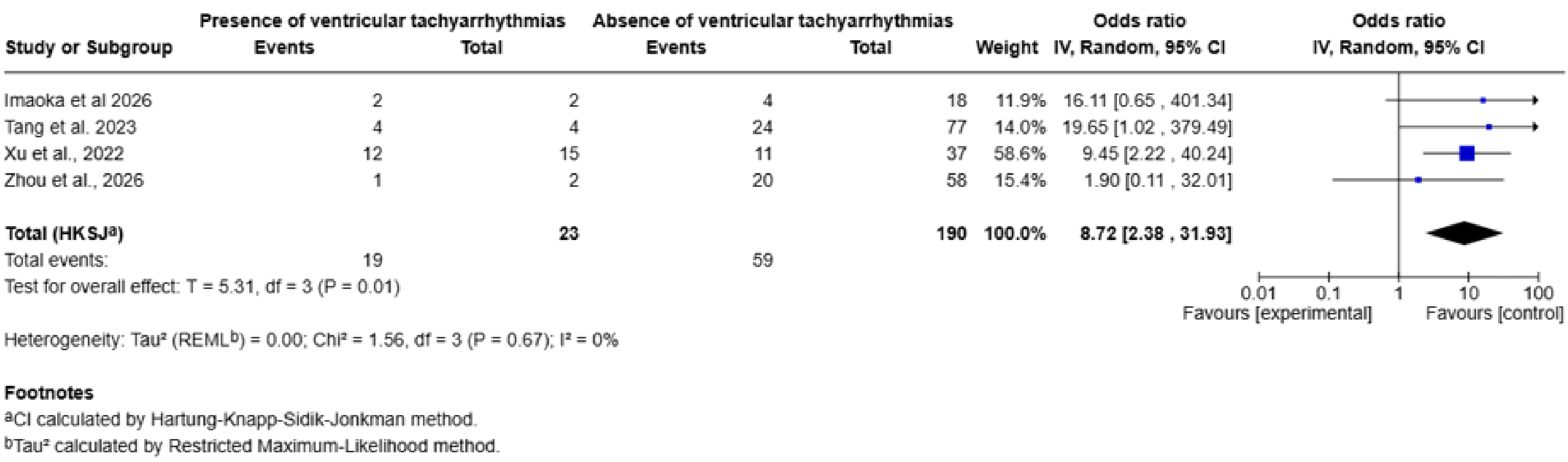
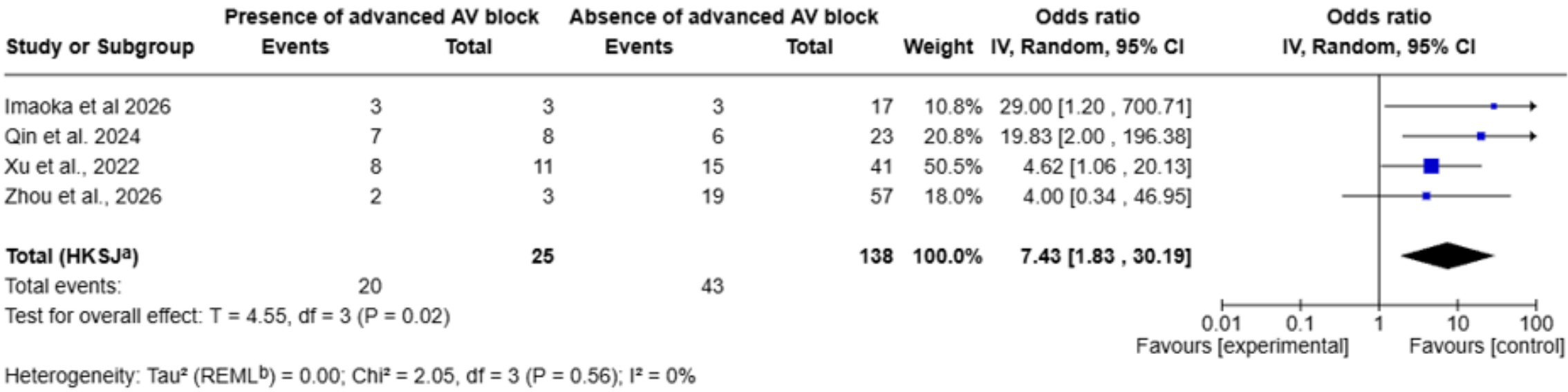
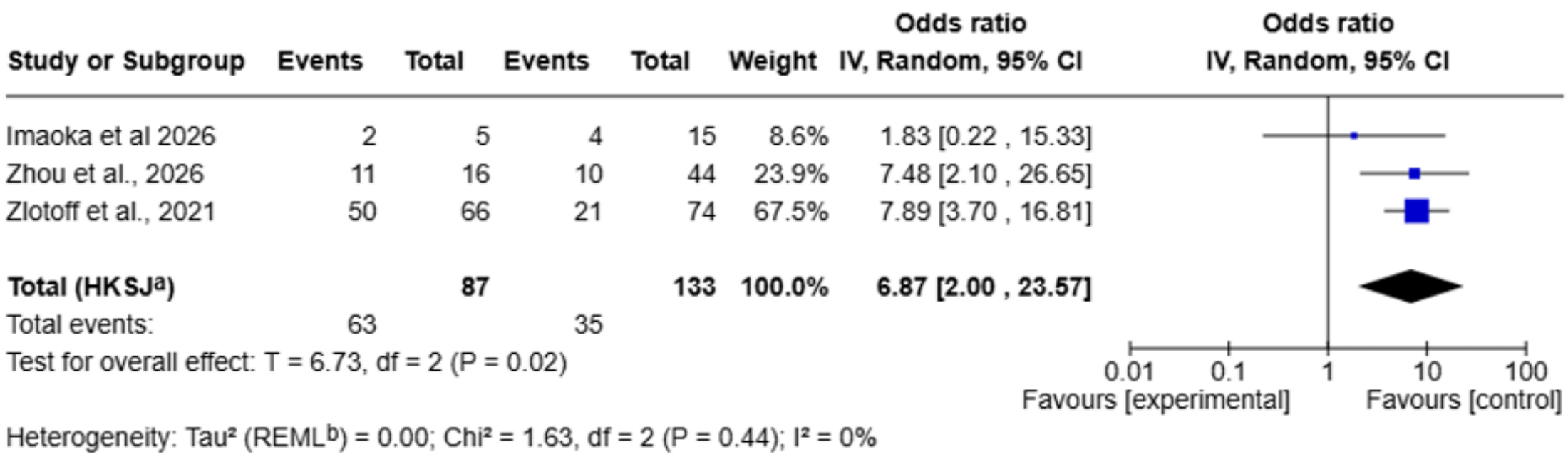
INTRODUCTION

Immune checkpoint inhibitor (ICI)-associated myocarditis is a rare but serious cardiovascular toxicity associated with major adverse cardiac events (MACE) and death. Electrocardiography is inexpensive, widely available, and routinely obtained in suspected cases, but the prognostic significance of individual ECG abnormalities remains uncertain.

METHODS

PubMed, Scopus, and Embase were searched from inception through July 2026. Studies evaluating ECG abnormalities and adverse outcomes in adults with ICI-associated myocarditis were included. The primary outcome was MACE. Secondary outcomes included all-cause and cardiac-related mortality, ventricular tachyarrhythmias, and advanced/complete AV block. Study quality was assessed using the Newcastle-Ottawa Scale. PROSPERO: CRD420261496883.

RESULTS



CONCLUSION

Across 12 studies including 988 patients, QRS prolongation, advanced AV block, ventricular tachyarrhythmias, and QTc prolongation were associated with adverse outcomes in ICI-associated myocarditis. ECG may help identify patients at increased risk and support early risk stratification, although small study numbers and variable ECG and outcome definitions limit certainty.

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