



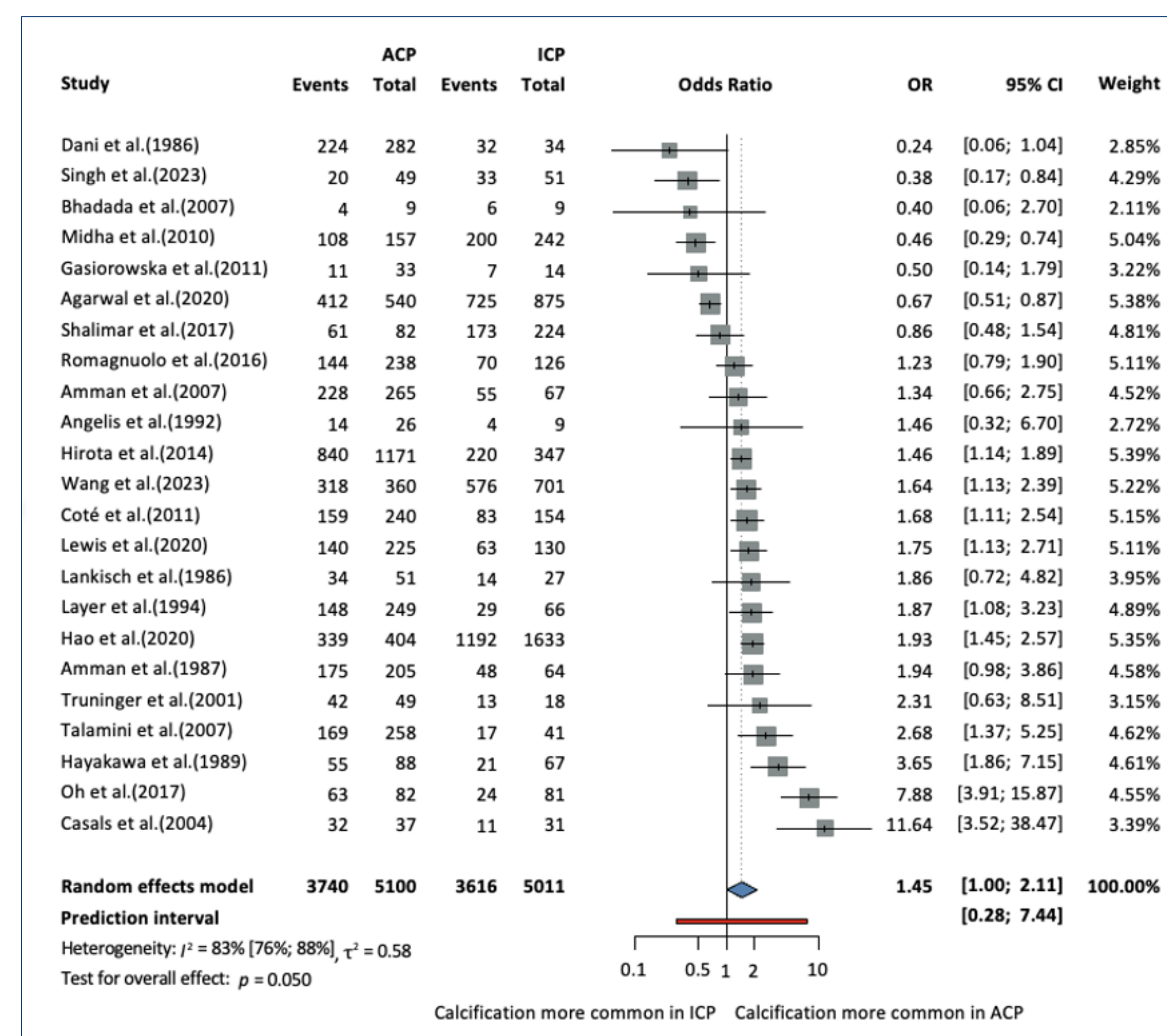
Pancreatic calcifications are the most frequent structural change in chronic pancreatitis (CP). It is associated with increased morbidity and healthcare costs. The factors associated with calcifying chronic pancreatitis phenotype are not well understood.

We investigated the risk factors for calcification in patients with chronic pancreatitis.

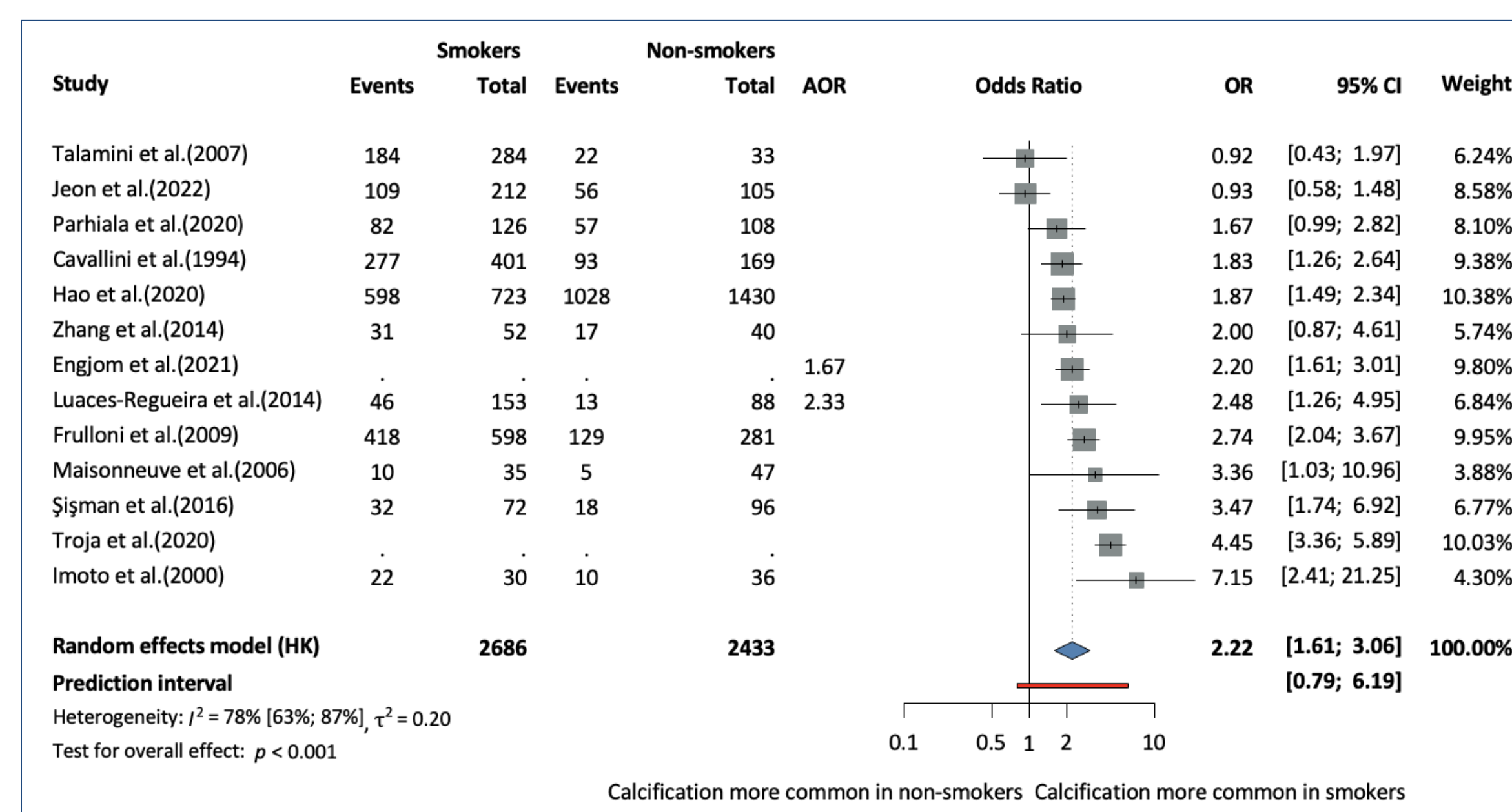
1. Centre for Translational Medicine, Semmelweis University, Budapest, Hungary, 2. Department of Internal Medicine, Toldy Ferenc Hospital, Cegléd, Hungary, 3. Institute of Pancreatic Diseases, Semmelweis University, Budapest, Hungary, 4. Department of Biophysics and Radiation Biology, Semmelweis University, Budapest, Hungary, 5. Institute for Translational Medicine, Medical School, University of Pécs, Pécs, Hungary, 6. Department of Radiology, Medical Imaging Centre, Semmelweis University, Budapest, Hungary, 7. Translational Pancreatology Research Group, Interdisciplinary Centre of Excellence for Research Development and Innovation, University of Szeged, Szeged, Hungary, 8. Carol Davila University of Medicine and Pharmacy, Bucharest, Romania, 9. Digestive Disease and Liver Transplant Center, Fundeni Clinical Institute, Bucharest, Romania

The study protocol was registered [on PROSPERO \(CRD42024591837\)](#). On September 18, 2024, we conducted a systematic search across three databases (PubMed, EMBASE, and CENTRAL) for studies reporting factors associated with calcification in CP. Odds ratios (OR) with 95% confidence intervals (CI) were calculated using a random effects model.

The systematic search resulted in 10,893 articles, from which **85 eligible studies were identified**, covering a total of 34793 participants. We investigated 11 potential risk factors for pancreatic calcification. Among these, **alcohol consumption** (OR=2.31, CI: 1.8–2.98) **and smoking** (OR=2.22, CI: 1.61–3.06) **were associated with a twofold increased risk of calcification** when compared to non-smokers and non-drinkers, respectively. (Figure 1-2.) The odds of calcification were also 45% higher in alcoholic versus idiopathic CP (OR=1.45, CI: 1.00–2.11). (Figure 3.)



**Figure 3.** Risk of calcification in alcoholic versus idiopathic chronic pancreatitis



Although multiple potential risk factors were assessed, only **alcohol consumption and smoking were significantly associated with calcifying CP phenotype**. As modifiable factors, these findings highlight the importance of incorporating smoking cessation and alcohol reduction programs into the CP standard of care.