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## **Survival Analysis of the Randomized Placebo-controlled Trial of the Drug D-Penicillamine for Patients with Primary Biliary Cirrhosis**

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Primary biliary cirrhosis (PBC) is a progressive disease thought to be of an autoimmune origin; the subsequent inflammatory process eventually leads to cirrhosis and destruction of the liver's bile ducts and death of the patient. The purpose of this study is to test the efficacy of drug D-penicillamine treatment to PBC patients by their survival compared to placebo-controlled group. The data, total 312 patients, are from the Mayo Clinic trial in PBC of the liver conducted between 1974 and 1984. Using nonparametric method, the equality of survival for treatment and placebo groups was tested. Chi-square and P value were 0.1017, 0.7498 (Log-Rank test); 0.0018, 0.9664 (Wilcoxon test); 0.0634, 0.8013 (Maximum Likelihood Ratio test), respectively. The Cox model was built to adjust the hazard ratio of drug by confounders, effect modifiers and time-varying coefficient. The difference between two groups is still non-significant. The drug D-penicillamine is considered to be ineffective on the survival of PBC patients.