

# Headaches and Heart Disease: The Lack of a Positive Association

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## SYNOPSIS

In order to investigate the relationship between headaches and cardiovascular disease, 200 individuals with recurrent idiopathic headaches were compared with age- and sex-matched controls for the prevalence of cardiovascular diagnoses and electrocardiographic (ECG) abnormalities. Only hypertension was diagnosed more frequently in the headache group; ischemic heart disease and valvular lesions were diagnosed equally in some cases and controls, as were rhythm disturbances. Matched ECG's were available in 161 pairs. Ischemic ECG changes were more frequent in the controls than the headache cases. There were no other differences in ECG findings. This study fails to show a predilection for cardiovascular diseases, other than hypertension, in individuals with headaches. Ischemic heart disease may, by ECG analysis, be less common in headache cases than nonheadache controls.

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## INTRODUCTION

Because migraine and other related idiopathic headaches are thought to have a vascular mechanism, they have traditionally been suspected to be associated with an increased risk for other cardiovascular diseases, including ischemic heart disease and hypertension. Although correlations between headaches and hypertension,<sup>1-3</sup> mitral valve prolapse,<sup>4,5</sup> and variant angina<sup>6</sup> have been described, no studies comparing the occurrence of all cardiac diseases in idiopathic headache patients and nonheadache controls can be found. The following study was undertaken to look for an association of headaches with ischemic heart disease and valvular cardiovascular problems.

## METHODS

Files of life insurance applicants were referred to a physician for 12-lead electrocardiogram (ECG) interpretation and/or a medical opinion. These files included copies of physician office records, diagnostic test results and, where appropriate, discharge summaries and consultation reports from inpatient records. Individuals were considered to have idiopathic headaches when review of the records revealed a

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history of recurrent headaches in the absence of fever, trauma, suspected neurological disease or other medical illnesses associated with headaches. The headache cases were matched by age and sex with control individuals for whom the medical records clearly stated that the person had no headaches. Cardiovascular diagnoses listed or described in the applicant's records were recorded for cases and controls. All electrocardiograms were read blindly by one board-certified internist, and the results recorded for cases and controls. (Criteria for ECG abnormalities are shown in Table 1.) The case-control pairs were then compared for differences in the prevalence of cardiovascular diagnoses and in ECG interpretations. Statistical analysis was performed using the sign test on discordant pairs.<sup>7</sup>

## RESULTS

Two hundred cases of idiopathic headache were matched with controls, including 100 pairs of men and 100 pairs of women. Age range was 25 to 63

Table 1  
Criteria for abnormal electrocardiograms.

1. Ischemic Changes
  - a. Pathological Q waves — Q waves of at least .03 seconds in duration either in both leads III and aVF or V1 and V2.
  - b. ST segment depression — horizontal ST depression of at least 1 mm. in two or more of the 12 leads.
  - c. T wave inversion — inverted T waves either in leads II, III and aVF or in two or more V leads from V3 to V6.
2. Conduction Defects
  - a. Left anterior hemiblock — leftward axis deviation beyond  $-45^\circ$ , plus a Q wave in lead I and an S wave in lead III.
  - b. Right bundle branch block — a QRS duration of at least .12 seconds with terminal S waves in leads I and V6 and a RSR' configuration in lead V1.
  - c. Left bundle branch block — a QRS duration of at least .12 seconds with all-positive R waves in leads I and V6, and a deep S wave in V1.
  - d. Other — a QRS duration of at least .12 seconds without the specific patterns in b. and c. above.
3. Other Abnormalities
  - a. Left ventricular hypertrophy — QRS voltage criteria: either S wave V2 plus R wave V5 of at least 40 mm or lead I R wave greater than 14 mm and aVL greater than 10 mm.
  - b. Nonspecific ST-T changes — flattened or absent T waves or ST segment scooping with or without biphasic T waves.