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Original Investigation

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Association Between Gout Flare and Subsequent Cardiovascular Events Among Patients With Gout

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Key Points

Question Among patients with gout, is there a transient increase in the risk of cardiovascular events after gout flares?

Findings In this case-control study that included 62 574 patients with gout, those who experienced a cardiovascular event, compared with those who did not experience such an event, had significantly greater odds of a recent gout flare in the prior 0 to 60 and 61 to 120 days (adjusted odds ratio [OR] for 0-60 days, 1.93; adjusted OR for 61-120 days, 1.57).

Meaning These findings suggest gout flares are associated with a transient increase in cardiovascular events following the flare.

Abstract

Importance Gout is associated with cardiovascular diseases. The temporal association between gout flares and cardiovascular events has not been investigated.

Objective To investigate whether there is a transient increase in risk of cardiovascular events after a recent gout flare.

Design, Setting, and Participants A retrospective observational study was conducted using electronic health records from the Clinical Practice Research Datalink in England between January 1, 1997, and December 31, 2020. A multivariable nested case-control study was performed among 62 574 patients with gout, and a self-controlled case series, adjusted for season and age, was performed among 1421 patients with gout flare and cardiovascular event.

Exposures Gout flares were ascertained using hospitalization, primary care outpatient, and prescription records.

Main Outcomes and Measures The primary outcome was a cardiovascular event, defined as an acute myocardial infarction or stroke. Association with recent prior gout flares was measured using adjusted odds ratios (ORs) with 95% CIs in a nested case-control study and adjusted incidence rate ratios (IRRs) with 95% CIs in a self-controlled case series.

Results Among patients with a new diagnosis of gout (mean age, 76.5 years; 69.3% men, 30.7% women), 10 475 patients with subsequent cardiovascular events were matched with 52 099 patients without cardiovascular events. Patients with cardiovascular events, compared with those who did not have cardiovascular events, had significantly higher odds of gout flare within the prior 0 to 60 days (204/10 475 [2.0%] vs 743/52 099 [1.4%]; adjusted OR, 1.93 [95% CI, 1.57-2.38]) and within the prior 61 to 120 days (170/10 475 [1.6%] vs 628/52 099 [1.2%]; adjusted OR, 1.57 [95% CI, 1.26-1.96]). There was no significant difference in the odds of gout flare within the prior 121 to 180 days (148/10 475 [1.4%] vs 662/52 099 [1.3%]; adjusted OR, 1.06 [95% CI, 0.84-1.34]). In the self-controlled case series (N=1421), cardiovascular event rates per 1000 person-days were 2.49 (95% CI, 2.16-2.82) within days 0 to 60; 2.16 (95% CI, 1.85-2.47) within days 61 to 120; and 1.70 (95% CI, 1.42-1.98) within days 121 to 180 after a gout flare, compared with cardiovascular event rates of 1.32 (95% CI, 1.23-1.41) per 1000 person-days within the 150 days before or the 181 to 540 days after the gout flare. Compared with 150 days before or the 181 to 540 days after a gout flare, incidence rate differences for cardiovascular events were 1.17 (95% CI, 0.83-1.52) per 1000 person-days, and adjusted IRRs were 1.89 (95% CI, 1.54-2.30) within days 0 to 60; 0.84 (95% CI, 0.52-1.17) per 1000 person-days and 1.64 (95% CI, 1.45-1.86) within days 61 to 120; and 0.38 (95% CI, 0.09-0.67) per 1000 person-days and 1.29 (95% CI, 1.02-1.64) within days 121 to 180 after a gout flare.

Conclusions and Relevance Among individuals with gout, those who experienced a cardiovascular event, compared with those who did not experience such an event, had significantly higher odds of a recent gout flare in the preceding days. These findings suggest gout flares are associated with a transient increase in cardiovascular events following the flare.

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