NSAID use and the risk of hospitalization for first myocardial infarction in the general population: a nationwide case-control study from Finland

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FROM ABSTRACT:

AIMS: To evaluate the risk of first myocardial infarction (MI) associated with the use of various non-steroidal anti-inflammatory drugs (NSAIDs) in the general population.

METHODS AND RESULTS: We conducted a population-based matched case-control study over the years 2000-3 in outpatient residents of Finland.

In the nationwide Hospital Discharge Register 33,309 persons with first time MI were identified.

A total of 138,949 controls individually matched for age, gender, hospital catchment area, and index day were selected from the Population Register.

For combined NSAIDs, the adjusted odds ratio for the risk of first MI with current use was 40% increased risk with a range between 33% - 48%.

The age of current user did not consistently modify the risk.

No NSAID was associated with an MI-protective effect.

All durations from 1 to 180 days of conventional NSAIDs were associated with an elevated risk of MI.

All durations from 31 to 90 days duration of COX-2 selective NSAIDs were associated with an elevated risk of MI.

CONCLUSION: Current use of all NSAIDs is associated with a modest risk of first time MI.

THESE AUTHORS ALSO NOTE:

There is accumulating data of the cardiovascular risks associated with the use of COX-2 NSAIDs.

This calls into question the cardiovascular safety of conventional [not COX-2] NSAIDs.
Therefore, these authors assessed the risk of first time myocardial infarction in users of both COX-2 NSAIDs and conventional NSAIDs.

RESULTS

“In all NSAID categories current use was statistically significantly associated with myocardial infarction.” [Very Important]

The increased risk for myocardial infarction with NSAID use was between 35% - 50%.

“None of the NSAIDs had a protective effect against myocardial infarction among current users.” [Important]

In the users of conventional NSAIDs, the increased risk for myocardial infarction were “constantly elevated regardless of the length of use.” [IMPORTANT: even for 1 day of use]

“Age or gender in current users did not modify the risk of myocardial infarction in any NSAID category.”

DISCUSSION

These authors found a clear association between first myocardial infarction and current use of NSAIDs. This association was present regardless of the NSAID category including conventional NSAIDs, semi-selective NSAIDs, and COX-2 NSAIDs.

In this study the myocardial infarction was closely associated with the proximity of NSAID use, and the risk of myocardial infarction decreased the longer the time from discontinuation of NSAIDs.

The increased risk of myocardial infarction “was elevated regardless of the duration” of NSAID use. [Very Important]

“Any risk of serious adverse event is important at the population level if a drug is not life-saving and is widely used, as is the case with NSAIDs.” [Important]

The risk of serious upper gastrointestinal events [bleeding] is 200 – 500% greater in users of NSAIDs compared to non-users.

However, hospitalizations for myocardial infarction are significantly higher than hospitalizations for upper gastrointestinal bleeding.

These authors “postulate that the risk associated with the long-term duration of NSAIDs therapy might be mediated by an increase in blood pressure.”
Both conventional and COX-2 NSAIDs “elevate blood pressure and expose users to cardiac failure.”

“This is the largest population-based observational study thus far on the cardiovascular risk associated with NSAIDs.”

In this study, only myocardial infarction admitted to hospitals was counted. Therefore, the actual numbers presented in this study are low because fatal myocardial infarction outside of the hospital and non-fatal myocardial infarction cared for in non-hospital health centers were not counted, nor were silent myocardial infarctions. [Important]

As NSAIDs are very widely used, their risk at the population level should be considered serious.

Those with the greatest risk of myocardial infarction from taking NSAIDs are those who were suffering from diabetes, hypertension, rheumatoid arthritis, and coronary artery disease.

This large population based study shows an association between “myocardial infarction with current use of all NSAIDs.” [Important]

KEY POINTS FROM DAN MURPHY

1) “This is the largest population-based observational study thus far on the cardiovascular risk associated with NSAIDs.”

2) The risk of serious upper gastrointestinal bleeding with using NSAIDs is 200 – 500% greater compared to non-users.

3) No NSAID is associated with a myocardial infarction-protective effect.

4) These authors found clear association between first myocardial infarction and current use of all NSAIDs. This association was present regardless of the NSAID category including conventional NSAIDs, semi-selective NSAIDs, and COX-2 NSAIDs. This calls into question the cardiovascular safety of conventional [not just COX-2] NSAIDs.

5) “In all NSAID categories, current use was statistically significantly associated with myocardial infarction.” [Very Important]

6) The increased risk for myocardial infarction with NSAID use was between 35% - 50%, and averaged 40%.

7) With use of conventional NSAIDs, the increased risk for myocardial infarction appeared after only one day of use. [Very Important]
8) Those with the greatest risk of myocardial infarction from taking NSAIDs are those who are suffering from diabetes, hypertension, rheumatoid arthritis, and coronary artery disease.

9) In this study, only myocardial infarction admitted to hospitals was counted. Therefore, the actual numbers presented in this study are low because fatal myocardial infarction outside of the hospital and non-fatal myocardial infarction cared for in non-hospital health centers were not counted, nor were silent myocardial infarctions. [Important]

10) As NSAIDs are very widely used, their risk at the population level should be considered serious because they are primarily taken for non life-saving reasons.