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Warfarin users more likely to need joint replacement

Warfarin is associated with greater risk of osteoarthritis than other types of anticoagulant.

INTRODUCTION

Osteoarthritis is a common condition that makes a person's joints painful. Some people also experience stiffness when seated for a prolonged period of time. Osteoarthritis is caused by breakdown of the cartilage and changes in the bones as well as other tissues within the joints. Joint pain is frequent, and joint swelling can sometimes occur. It is the most common of all the different types of arthritis, and typically becomes more common as people get older. Osteoarthritis is a leading cause of disability worldwide. Yet there are no proven treatments to treat or prevent disease progression. One option to help manage this disease is to understand risk factors that can be treated or modified.

Vitamin K is important for healthy functioning of proteins in cartilage and bone, two major tissues in joints that are affected in osteoarthritis. Vitamin K deficiency has been associated with osteoarthritis, and one small trial showed that vitamin K supplements might reduce progression in people with low vitamin K.

Some people may need to take anticoagulant drugs (blood thinners) to reduce the chance of blood clots. For example, you may be prescribed an anticoagulant if you have a heart condition called atrial fibrillation. You may also take an anticoagulant if you have clots in your blood vessels – for example, if you have pulmonary embolism. Some anticoagulant medicines work by blocking vitamin K. These are called *vitamin K antagonist anticoagulants* – VKA for short. VKAs limit the availability of vitamin K, and affect the proteins that depend on it. Warfarin and acenocoumarol are two common VKA medicines.

WHAT DID THE AUTHORS HOPE TO FIND?

The authors wanted to find out if warfarin has a negative impact on osteoarthritis. The authors studied older adults with atrial fibrillation to compare the effects of warfarin and other anticoagulants on osteoarthritis.

WHO WAS STUDIED?

This study looked at over 4000 people with atrial fibrillation. Everyone included had information recorded in the Health Improvement Network, a general practitioner-based electronic medical records database from the United Kingdom (UK), which is representative of the general UK population.

HOW WAS THE STUDY CONDUCTED?

This was a case-control study using data from electronic medical records. Within the group of people with atrial fibrillation, the authors looked for anyone who also had advanced (end-stage) osteoarthritis – reflected by having a knee or hip replacement. They then compared those on the VKA warfarin with people on a different type of blood thinner called a *direct oral anticoagulant* or DOAC, to see if one group had more joint replacements than the other. DOACs do not affect vitamin K functioning.

WHAT WERE THE MAIN FINDINGS OF THE STUDY?

Of the 857 joint replacement cases, 65% were warfarin users. Among 3428 people in the control group without joint replacement, 56% were warfarin users.

The authors found that warfarin users were 59% more likely to have a knee replacement or hip replacement than DOAC users. They also found an increasing risk of knee or hip replacement surgery with increasing duration of warfarin use.

ARE THESE FINDINGS NEW?

Yes. Before now, no other studies have evaluated whether vitamin K antagonism with warfarin can be detrimental to osteoarthritis. This study supports the hypothesis that warfarin increases the risk of knee or hip replacements compared to DOACs, which are not vitamin K antagonists.

An accompanying study by Boer and colleagues compared people using VKA and non-vitamin K inhibiting anticoagulants in a local population study. That group also saw an increased risk for osteoarthritis in people taking VKAs.

WHAT ARE THE LIMITATIONS OF THE STUDY?

Because this is an observational study, we cannot rule out the possibility that there were factors other than warfarin that increased the risk of joint replacement. However, in their analysis the authors adjusted for factors that could have contributed. It is unlikely that there will be a randomised trial to directly address this question, so observational data are important to provide insights. The authors assessed prescriptions from medical records, which do not necessarily reflect whether people took the medication. Finally, joint replacement was used to class people as having end-stage osteoarthritis rather than radiographs, and there could have been other reasons for the surgery. However, the majority of knee replacement surgeries are performed for knee osteoarthritis.

WHAT DO THE AUTHORS PLAN ON DOING WITH THIS INFORMATION?

These data complement the existing literature showing the importance of adequate vitamin K in limiting the progression of osteoarthritis. The next steps would be to conduct a randomised clinical trial of vitamin K supplementation in people with osteoarthritis who have low vitamin K.

WHAT DOES THIS MEAN FOR ME?

If you have osteoarthritis – or are at high risk of developing osteoarthritis – you should discuss your options with your physician if you need anticoagulation for another health condition to see if blood thinners other than a VKA such as warfarin may be appropriate. There are other types of anti-coagulant medicines that do not inhibit vitamin K. These are called new or direct oral anti-coagulants (shortened to DOAC). However, in some conditions, warfarin is the only approved option. If you have been prescribed a VKA such as warfarin, it is very important that you do not stop taking it without medical advice. Talk to your doctor if you have any concerns about your disease or its treatment.

The results also suggest vitamin K supplementation might be helpful in people with osteoarthritis. This is yet to be investigated in clinical trials, but you could try including foods with more vitamin K as part of a healthy diet. For example, green leafy vegetables such as kale or spinach, and broccoli.

FURTHER READING

Boer CG, *et al*. Vitamin K antagonist anticoagulant usage is associated with increased incidence and progression of osteoarthritis. *Ann Rheum Dis* 2021;80:598–604. doi:10.1136/annrheumdis-2020-219483.

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