



Warfarin: an anticoagulant or “blood thinner”

The widely used drug Warfarin is often referred to as a “blood thinner”. It does not thin the blood; it stops blood from clotting. It is not like a paint thinner or liquid paper thinner. It is a drug which blocks specific processes within the body, interfering with the availability of Vitamin K. It is therefore referred to as a Vitamin K antagonist. Vitamin K is essential for the proper formation of blood clots. An under-dose of Warfarin will not stop blood from clotting. Taken in overdose, bleeding may occur at any susceptible site in the body.

Background

Fifty years ago, a famous London cardiologist (with the voice of a Welsh preacher) giving a medical lecture in the USA, startled his audience, opening his address thus- “Anticoagulants?- rat poison!” Warfarin in large dose (for rats and mice) is indeed a highly effective rodent poison. The rodents bleed to death. What is a proper human dose?

How is Warfarin taken?

Human administration needs to be adjusted to ensure that the level of effect lies in a range between where the dose is effective and where it should not lead to unwanted bleeding. Laboratory tests give us the measure of effectiveness in an individual patient on a specific day. The measure is called the prothrombin time (PT) or is converted to the International Normalised Ratio (INR). The normal INR is 1. The therapeutic range of INR is usually 2 to 3. Warfarin is taken in tablet form. In Australia, there are two major preparations, Coumadin and Marevan.

They are not quite interchangeable and caution is required in prescribing by the doctor and dispensing by the pharmacist. Both drugs come as 1 mg and 5 mg tablets, but Coumadin is also available as a 2 mg tablet, while Marevan is available as a 3 mg tablet.

Blood tests

Samples of blood are required for laboratory testing every couple of days when the drug is first introduced. We all vary in our response to the drug (as determined by PT or INR values). When the required level is achieved, tests may initially be on a weekly basis for the first month or so, and then monthly thereafter.

Long term regular testing is needed for several reasons. There may be interactions with other drugs introduced for some different purpose. Patients must be careful when taking complementary therapies: the effects of Warfarin are increased by ginger, garlic and ginseng. Other herbal treatments may also interfere with the effectiveness of the drug. PT and INR are also influenced by Vitamin K intake in certain foods. A list of foods which may interfere with the effects of Warfarin may be available with the tablets, or from the pharmacist, or prescribing doctor. Most people achieve the desired level of PT or INR and maintain it with a steady dose thereafter, provided that they have regular habits, controlled alcohol consumption (alcohol increases the anticoagulant effect of Warfarin) and no wild changes in diet.

Who is prescribed Warfarin?

Some people need an anticoagulant on a long term or permanent basis. This long term medication is usual for people who are likely to develop blood clots within the heart.

The drug is commonly used in those who have the pulse irregularity of atrial fibrillation, those with

established chronic heart failure who are breathless and have enlarged heart chambers, those with valve abnormalities and an enlarged heart and those who have artificial heart valves (prostheses) replacing previously damaged, narrowed or leaking heart valves. All of these conditions are much more common amongst the elderly, a rapidly increasing portion of the population. Thus medication with Warfarin is also increasing rapidly. Does that matter? Yes, it does. The older one is, the more likely the blood vessels are to be damaged easily, such that bleeding may occur anywhere. Bleeding may be into the stomach if there is an ulcer, into the urine if there is a kidney stone, into the bowel or into the brain causing a stroke if the blood pressure is high. Thus we have increasing risk of bleeding with advancing age, increasing risk of blood clotting with advancing age, increasing sensitivity to drugs including Warfarin with advancing age and increasing chance of drug interactions with advancing age as we take more medications for other conditions related to ageing. This seems to present a dilemma, a medical balancing act. It is not too bad. Blood tests reveal any trends in PT or INR to be changing (one way or the other). If the PT and INR is too low, the Warfarin dose is increased. If the PT or INR is too high, the Warfarin dose can be reduced: also there is an antidote- Vitamin K by injection.

Some people require Warfarin for a period of only weeks or months. These include those with deep vein thrombosis (DVT) in the legs or elsewhere and people who have had a blood clot move from the leg to the lung, or a similar problem.

Is Warfarin effective and truly valuable?

In the face of all of the above, does Warfarin treatment have overriding benefit? The answer is yes, it does. Fully controlled, the drug markedly reduces the formation of blood clots in the heart

and the risk of subsequent stroke or other crises owing to a portion of blood clot coming free and lodging in the brain or elsewhere. Fully monitored and properly controlled, the gains for the many far outweigh the possible hazards for the few. Is this another balancing act? No, this is good preventive medicine and patient care. Like all medications, Warfarin should be prescribed, dispensed, monitored and controlled properly.

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