Background: Atrial fibrillation (AF) is an arrhythmia that increases the risks of blood clots, stroke, heart failure. Oral anticoagulation with warfarin has been associated with the reduced formation of thrombus, thus reducing the risk of AF related stroke. Novel oral anticoagulants (NOACs) were developed in response to the downsides of warfarin. The first of which was dabigatran, an oral produg, thrombin inhibitor. Objectives: The purpose of this study is to review the literature comparing warfarin and dabigatran on their efficacy (rates of stroke and systemic embolism), cost-effectiveness, and safety (events of major hemorrhage). Cost effectiveness was determined based on quality-adjusted life-years (QALYs).

Methods: Medline (Ovid) was used as a database with the search terms: stroke, warfarin, dabigatran, and AF. Limited to English, full text, published from 1999-2016 six articles were then reviewed for their use in this abstract. Two fundamental studies were not revealed by the original search, but were sourced by all articles chosen and was therefore included. Eight articles were used.

Results: Dabigatran is prescribed in a 110 mg dose (D110) or a 150 mg dose (D150) twice daily. It was found that D110 had similar efficacy to warfarin but improved safety rates. D150 had reduced rates of stroke and systemic embolism compared to warfarin, but similar rates of major hemorrhage. In addition, dabigatran safety may differ between sexes. Thirdly, NOACs are more expensive but more cost-effective than warfarin based on QALYs. D150 cost less than D110 per improvement in QALYs.

Conclusion: Both doses of dabigatran were found to be non-inferior to warfarin for safety and efficacy rates. D150 was superior in regards to efficacy rates. D110 was superior to D150 in warfarin cost-effectiveness. Future exploration into a tailored dose of Dabigatran and sex-differences.

INTRODUCTION

AF is an arrhythmia that increases the risks of blood clots, stroke, heart failure. The Center for Disease Control estimate 2.7–6.1 million people in the United States have AF. Stroke is the leading cause of death and disability by the Public Health Agency of Canada; cost for health care and lost productivity due to premature death and long-term disability in 2000 was estimated to be $36.6 billion. Oral antithrombotic and anticoagulation has been associated with the reduced formation of thrombus thus reducing the risk of AF related stroke. Warfarin, a vitamin K antagonist, is the popular oral anticoagulant in the prevention of stroke but has downsides. Warfarin was found to reduce the risk of stroke but increase the risk of hemorrhage. It is difficult to use, as it has many food and drug interactions and requires diligent monitoring. In response NOACs were developed, the first of which was Dabigatran. The oral produg, thrombin inhibitor. The produg is processed by a serum esterase to become dabigatran. Dabigatran has a rapid onset, easy to use, and has fewer interactions. Its bioavailability is 8%, with a half life of 12-17 hours it does not require regular monitoring.

RESEARCH QUESTION

Is Dabigatran or Warfarin more effective, safe, and cost-effective for the prevention of stroke in patients with AF?

Figure 1. Flowchart showing the process of article selection. After searching the key words and applying the inclusion and exclusion criteria, a total of eight articles were used