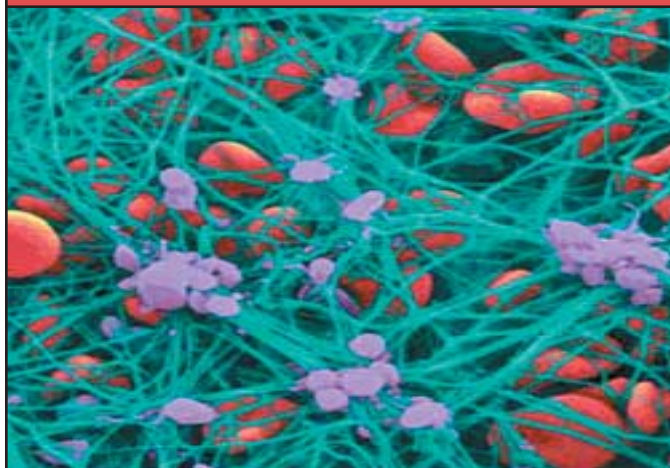


CASE TEACHING NOTES for “Sometimes Less is Better: The Treatment of Venous Thromboembolism”



by

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PREAMBLE

Given the dynamic nature of medical research, it is recognized that this case study as it is presented is not timeless. In fact, a new study was recently published that adds new information to the question of what therapeutic approach is most effective in preventing the recurrence of venous thromboembolism (see Kearon et al., 2003, “Comparison of low-intensity warfarin therapy with conventional-intensity warfarin therapy for long-term prevention of recurrent venous thromboembolism,” *New England Journal of Medicine* 349(7):631–9; the abstract for this article is reprinted in the case as “Further Research”). With this in mind, the authors suggest that this case is more appropriately viewed as a template for a new approach to conducting the typical residency journal club session rather than as a case that can be directly utilized in a classroom setting. This case study can also be used as a template to demonstrate the importance of critical evaluation and application of evidence-based medicine. The case teaching notes that follow, however, are specific to the case as it is presented.

INTRODUCTION

This fictionalized case is based upon an actual patient scenario encountered by David Newberger, M.D. at his Family Medicine clinical practice site. This interrupted case was originally created to be used in conjunction with a primary literature reference as part of a journal club for first- through third-year Family Medicine Residents. If used in this context, the focus of the case is on critically evaluating current medical literature for the purpose of determining if the study results have practical application to daily medical practice. The case, with some minor revisions, would also be appropriate for graduate medical and pharmacy students in their third or fourth professional year. If used in this context, the emphasis would be more on the medical condition and treatment options associated with the case and as an example of evaluation and case-based application of evidence-based medicine.

Background

Venous thromboembolism (VTE), the subject of the case, is a potentially life-threatening medical condition that has a propensity for recurrence after an initial diagnosis of either deep vein thrombosis (DVT) or pulmonary embolism (PE). Pharmacotherapeutic management often consists of a brief period (approximately one week) of intravenous heparin or subcutaneous low molecular weight heparin (LMWH) anticoagulant in conjunction with the initiation of oral warfarin therapy. While warfarin therapy, if maintained within a narrow therapeutic range, is successful in preventing the recurrence of DVT and PE, it has many associated problems, including frequent monitoring, many drug interactions, and potentially significant adverse effects, particularly when nearing the upper limit of the therapeutic range. There is, therefore, a desire within the medical community to find options that improve the margin of safety (lower therapeutic ranges), improve patient convenience and adherence (less frequent monitoring), and help to clarify the question of how long a patient should be maintained on warfarin therapy and at what intensity of anticoagulation.

Objectives

- To review the physiology and pathophysiology of the coagulation cascade.
- To be introduced to contemporary developments in the treatment of venous thromboembolism.
- To gain an appreciation of the statistical methodology employed, as well as analyzing in-depth the tables and charts provided in the article.
- To conduct a thorough critical appraisal of an article in the current medical literature.
- To apply knowledge gained and conclusions from the current medical literature to treatment decisions in a specific patient case.

Preparation and Prerequisite Knowledge

It is recommended that students have the following background information and experience:

- An introductory statistical course that taught concepts including interpretation of P values, interquartile ranges, hazard ratios, and confidence intervals.
- An introductory health sciences course in anatomy/physiology that covered the intrinsic and extrinsic pathways in the coagulation cascade.
- A therapeutics course that contained material related to the diagnosis of coagulation disorders and their consequences (such as DVT and PE), current standards of care for patients requiring anticoagulation, and pharmacotherapeutic options.

Prior to the journal club session during which this case will be discussed, it is recommended that the members of the group have done the following:

- Reviewed material related to the coagulation cascade.
- Read the introduction, methods, and results section of the article, “Long-term, low-intensity warfarin therapy for the prevention of recurrent venous thromboembolism” (Ridker et al. 2003).

CLASSROOM MANAGEMENT

Prior to group discussion of the case and article, the members of the group are given to read a copy of the case and a “blinded” copy of the journal article that contains only the introduction, methods, and results sections from which identifiers have been removed so that the article citation can not easily be located.

The students should be divided up into groups of four to five individuals that will work together during the in-class discussion session. For the in-class discussion, students should be instructed to sit with their group.

Before the journal club begins, the moderator chooses four people to read the parts of Mr. Ed Cramer, Dr. Kathy Johnson, Dr. Samantha Springer, and the narrator. After a brief introduction by the moderator, the case is read aloud by the chosen actors. (Approximately 5 minutes)

Depending on the specific group of individuals with whom this case is being used, the moderator may determine that it is appropriate to provide a brief period of time for comments on the case. (Approximately 5 minutes)

The moderator then provides each group with a series of questions that are designed to facilitate the review of background information related to venous thromboembolism, including physiology (the coagulation cascade), pathophysiology (Virchow's Triad, risk factors, signs and symptoms of DVT and PE), pharmacology, pharmacokinetics, adverse effects, and interactions associated with warfarin therapy. (Approximately 15 minutes)

The moderator has members within each group volunteer to provide their answers to the above series of questions related to the background information. If there are differences in responses among groups, the moderator should determine the source for the discrepancy and provide the rationale for the correct answer(s). (Approximately 10 minutes)

Each group then receives a packet containing the print-outs of the charts and tables contained within the article and the series of questions related to each that should be answered to facilitate interpretation of the results. (Approximately 30 minutes)

Members within each group then either volunteer or are chosen by the moderator to share their answers to the questions. If there are differences in responses among groups, the moderator should determine the source for the discrepancy and provide the rationale for the correct answer(s). Particular emphasis should be placed on the decisions that were arrived at regarding therapeutic options for Mr. Cramer. (Approximately 10 minutes)

Before the end of the session, each participant should be provided with a copy of the complete, "unblinded" article. The moderator should also provide some closing remarks and answer any remaining questions related to the case or the article. (Approximately 5 minutes)

ANSWER KEY

Answers to the questions posed in the case study are provided in a separate answer key to the case. Those answers are password-protected. To access the answers for this case, go to [the key](#). You will be prompted for a username and password. If you have not yet registered with us, you can see whether you are eligible for an account by reviewing our [password policy and then apply online](#) or write to answerkey@sciencecases.org.

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