Introduction

While the definition of medical futility remains nebulous, it has generally been used to describe medical treatment that has no long-term benefit for patients. This case explores the ethical issues surrounding medical futility in infective endocarditis of a prosthetic valve in a recidivist intravenous drug user.

The Case

A young man with a history of intravenous drug use initially presented with tricuspid valve endocarditis and received a bioprosthetic valve replacement. He was discharged with strict instructions to avoid drugs, and was given a referral to a buprenorphine clinic. Six months later the patient presented with severe sepsis and purpura fulminans. Blood cultures were positive for methicillin-sensitive staphylococcus aureus and candida albicans. Transthoracic echocardiogram showed multiple large mobile masses on the tricuspid valve, along with severe tricuspid regurgitation. Despite the patient’s critical illness, he gradually improved with intravenous antibiotics, successfully clearing his bacteremia and fungemia; however, the patient was not deemed to be a surgical candidate for repeat valve replacement. The patient repeatedly stated his intention to fight his disease and “do everything.” His care team sought second opinions from three different surgeons, who also deemed the patient to not be a surgical candidate. Shortly thereafter, the patient died from complications of sepsis.

Learning Objectives

- What is medical futility?
- How has our understanding of medical futility changed over time?
- How does this case fit with our modern understanding of futility?

Discussion

The concept of medical futility is as old as Hippocrates (see Figure 1). The last 60 years, with the advent of life support and the modern ICU, has required fundamental changes in the way that physicians approach concepts of futility, with some ethicists asserting that futility no longer exists. While the approach to futility is undergoing constant evolution (see Figure 2), the theoretical definition was described by Trotter in 1999, and closely mirrors statements by the American Medical Association and the Society of Critical Care Medicine (see Figure 3).

The case of the recidivist intravenous drug user with endocarditis challenges Trotter’s criteria since a repeat valve replacement would be potentially curative, leading to a possible ethical dilemma. Professional societies and legislative bodies have no current statements to guide physicians in such a position. The American College of Cardiology and American Heart Association only state that "surgery is not indicated if complications or comorbid conditions make the prospect of recovery remote.”

Therefore, individual physicians have struggled to develop and apply ethical frameworks. A review of the literature shows that approaches can be divided into three categories:

- Replacement – This view, though not commonly advocated – is to replace the valve of an IVDU, just as one would offer a repeat CABG to a patient who continued to smoke.
- Societal cost – More commonly advocated, this view looks to organ transplantation as its model. While valves are not as scarce as organs, they are very expensive and thus require evaluation from a multidisciplinary team – and multidisciplinary follow-up, including substance abuse counseling – prior to the procedure. A repeat valve is not routinely offered in this model.
- Three strikes – A combination of the first two models, this approach sees endocarditis as a symptom of the underlying disease of drug abuse. Surgeons will therefore get informed consent before the procedure for a single (or two additional) valve replacements.

As this case demonstrates, the lack of clear guidelines has left difficult ethical decisions in the recidivist intravenous drug user with infective endocarditis largely in the hands of individual providers. The understanding of medical futility remains a “moving target” and further input from ethicists, physicians and surgeons, professional societies, and policymakers will be essential to ensure ideal patient outcomes.

Figure 1: Hippocrates

"But I don’t want to die!": The Ethical Issues Surrounding Repeat Infective Endocarditis in a Recidivist Intravenous Drug User

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Figure 2: Three Generations of Futility

1980s-1990s: Defining Futility

- Objective rating scales. Examples:
  - Diagnostic criteria, such as “HIV with >2 PCP infections”, “Coma > 48 hours”
  - 1% (or 2% or 5%) criteria, that is, if the last 100 treatments for a condition have failed, that treatment should be considered futile
  - Physiologic futility, i.e., if an intervention only effects physiological outcomes and not meaningful quality of life, e.g., mechanical ventilation in a persistent vegetative state.

1990s-2000s: Dispute Resolution

- Growth of ethics committees and hospital procedures to resolve disputes over futility.
- In some states codified into state law, such that an ethics committee’s decision carried legal authority.

2000s-present: Communication

- Modern view that futility disputes are usually communication breakdowns.
- Focus is on enhanced communication between patients, family, medical teams, and ethics committees, taking cues from dispute resolution in other fields like business and law.

Figure 3: Trotter’s Criteria

1. There is a goal
2. There in an action and activity aimed at achieving this goal; and
3. There is virtual certainty that the action will fail in achieving this goal.

Figure 3: Trotter’s Criteria

Bibliography