What is a case study?
Case study

• Disseminates new knowledge gained from clinical practice
  – Not: research or ‘evidence-based’
  – Rather
    • Gain insight into clinical interaction
    • Frame questions for clinical studies

• Teaching moments
  – Rare or unusual clinical presentations
What makes a good case report?

• Unique presentation or problem solving
• Relevance
  – Warning of problems under specific circumstances
  – Implications for improving practice
An Anti-Coagulation Conundrum: Implantation of Total Artificial Heart in a Patient with Heparin-Induced Thrombocytopenia Type II

Patient: Male, 44
Final Diagnosis: Heparin-induced thrombocytopenia Type II
Symptoms: Congestive heart failure • short of breath
Medication: —
Clinical Procedure: LVAD explantation • TAH insertion
Specialty: Anesthesiology
Objective: Rare co-existence of disease or pathology
**Background:** Heparin-induced thrombocytopenia (HIT) is a rare but life-threatening complication of heparin administration. It can present a major clinical dilemma for physicians caring for patients requiring life-saving urgent or emergent cardiac surgery. Studies have been published examining the use of alternative anticoagulants for patients undergoing cardiopulmonary bypass (CPB), however, evidence does not clearly support any particular approach. Presently, there are no large-scale, prospective randomized studies examining the impact of alternative anticoagulants on clinical outcomes for HIT-positive patients requiring cardiac surgery.

**Case Report:** We present the case of a patient who underwent SynCardia Total Artificial Heart (TAH) implantation following a recent left ventricular assist device (LVAD) placement. The patient was receiving argatroban for type II HIT with anuric renal failure, and developed a thrombus which occluded the inflow cannula of the LVAD. Based on a published study and after establishing consensus with the surgical, anesthesiology, perfusion, and hematology teams, we decided to use tirofiban as an antiplatelet agent to inhibit the platelet aggregation induced by heparin, and ultimately used heparin as the anticoagulant for cardiopulmonary bypass.

**Conclusions:** When selecting anticoagulation for a HIT-positive patient requiring CPB, so that benefits outweigh risks, it is of paramount importance that the decision be based on a multitude of factors. The team caring for the patient should have a shared mental model and be familiar with the pharmacology, devices used, and local practices. These three elements should be integrated with patient-specific comorbidities along with local monitoring capabilities to ensure safe, efficient patient care.

**MeSH Keywords:** Acute Kidney Injury • Anticoagulants • Cardiopulmonary Bypass • Heart, Artificial • Heparin
Mechanics of the CR
Components

• Title page
  – Authors
  – Keywords (3-10)
• Abstract
• Introduction
• Case description
• Discussion
• Conclusion

• **Note:** there is no specific word length requirements – just whatever is required to tell the story. The reviewers will typically indicated if there are too few or too many words.
Title page

• Title
  – Clear and concise
  – Include ‘case report’
• Authors
• Keywords

Title and keywords – last step
Abstract

• “30 sec commercial” about why reader should read
• Clear and concise (200 words)
• Clear sense of VALUE of the case (WHY it should be reported)
• Provides just enough background to provide context
• Brief case presentation (just the most relevant facts)
• Conclusions of what learned and clinical implications
  – Supports the WHY
Introduction

• 1-3 CONCISE paragraphs
• Should be in present tense
• Provides the justification of WHY worthy to be reported
• Include
  – Main features of case
  – Brief literature review
    • Just enough for reader to understand the nature or context of the case
    • Describe the ‘expected’ (brief description of ‘routine’ and accepted standard of care.
    • Provides general context of ‘uniqueness’
      – # times observed, circumstances, standard of care, etc.
  – Why unique statement = why being reported
Case description

- Case description ("just the facts" – no interpretation)
  - Narrative format – "tell the story"
  - Use past tense
  - Maintain confidentiality
  - Concise
  - Chronological (although some flashbacks may be necessary)
- Include:
  - Relevant information only [to demonstrate the sequence and provide adequate support of the story line. (demographic, primary symptoms, brief medical Hx, lab data (etc.) – include what you would normally use. If additional tests or information required – explain...]
    - If non-routine tests required – may need to include materials and methods section.
  - Treatment approach
    - Provide relevant information about conduct of perfusion and circuit
  - Outcome
Discussion

- Focus on case’s significance (Why unique)
- Provide additional relevant information not included in case presentation to provide the right context for understanding the case.
- Justify case report with evidence (from literature review)
  - Similar CRs
  - Provide context of previous CRs
  - General description of standard of care (literature review – limit to what illuminates the case, but do not expand), especially if treatment required a deviation from the standard of care
- Provide evidence that supports solution
- Explain why deviate from supporting evidence = what made case different such that out of the box thinking was required to generate solution
- Identify and discuss and questions that the case brings up
- Not required to speculate on reasons for outcome – can make statement in conclusions (i.e. need more studies to determine if this observation is real)
Review of the literature

• Must provide evidence of search strategies to demonstrate that did thorough search for similar cases. [Can’t just say that a search failed to turn up any similar cases]

• In discussion: Brief summary of how search conducted (databases, search terms, how far back ...)
Review of the literature

“Review”

• In some instances the case study may be about an uncommon presentation.

• A more extensive “review” may be required to provide the reader with the context necessary to understand the details of the case.

• If a more extensive review is required (not common), consider indicating that the manuscript is a case study and a review of the literature (vs. just a case study).
Review of the literature

• How many references?
Databases


- Journal of Medical Case Reports: [http://jmedicalcasereports.biomedcentral.com/](http://jmedicalcasereports.biomedcentral.com/)


- JECT: [http://www.amsect.org/page/ject](http://www.amsect.org/page/ject) → click Search → category: Case report (132) [Note Case reports = 13; Case study = 1; Case series = 2]


Accessing the literature?

- Pubmed → list of articles
  - Filters
  - Abstracts
  - Articles
Beware of BIAS

• Confirmation
  – Search using multiple key words

• Access
  – Search strategies:
    • Free full text – PubMed Central
    • Pay or rent article: $$$
    • Open source: quarantine period
    • Medical school library
    • Hospital access to medical library
    • Google scholar: https://scholar.google.com/
      – Search by author name
Google Scholar search

• PubMed search
  – Search terms: Case reports heparin-induced thrombocytopenia

  Bivalirudin in off-pump coronary artery bypass graft in a patient with heparin-induced thrombocytopenia: a case report of its use.
  Audette MD, Glyph DC.
  PMID: 26016170
  Similar articles

  – Google Scholar: “Audette MD bivalirudin”
Bivalirudin in Off-Pump Coronary Artery Bypass Graft in a Patient With Heparin-induced Thrombocytopenia: A Case Report of its Use

Misty Dawn Audette, CRNA, MSN, ARNP
Derrick C. Glyph, CRNA, DNAP

Heparin-induced thrombocytopenia (HIT) is an antibody-mediated reaction in which heparin administration causes a person to enter a pathological and highly prothrombotic state. When patients with known HIT undergo coronary artery bypass and grafting procedures, they must be appropriately anticoagulated. The dangers of heparin administration in this population necessitate the use of an alternative anticoagulant.

The case describes the successful use of bivalirudin for procedural anticoagulation during an off-pump coronary artery bypass and grafting.

Keywords: Bivalirudin, CABG, coronary artery bypass and grafting, heparin-induced thrombocytopenia, off-pump artery bypass and grafting.
Other search or access strategies?
Conclusion

• Take home message = importance and relevance
• Implications for practice
JECT Submission process

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