Research Opportunities at Winona Health
An Overview for Students and Mentors
Program Concept

• The program is designed to give undergraduate pre-professional students the opportunity to:
  • Learn basic principles of research including study design, protocol development, data collection, data analysis, and presentation/publication
  • Work in a hospital environment, understand the basic structure of the medical profession and the hospital environment, to assist with career decisions
  • Provide student researchers access to a vast amount of clinical data that can be used to support their research interests or requirements
  • Allow students the opportunity to observe clinical medical practice, including observing surgical procedures
Types of Research that Winona Health Supports

• Clinical Studies
  • A student is assigned to assist a Winona Health physician or nurse with a research study. The usual goal of this type of research is to answer a clinical question and ultimately seek publication/presentation.

• Required Quality Assurance Studies
  • A student is assigned to help a Winona Health department or committee gather and analyze data to help improve patient care. This usually involves developing clinical management protocols based on the research findings. These opportunities are the most plentiful.

• Student-driven projects
  • If a student has a research requirement for their collegiate coursework (i.e., Capstone Project), Winona Health is eager to help. We can assign a faculty mentor and provide the student access to clinical data. We can also serve a source of patient referrals for hands-on clinical studies.

*****Examples of each of these types of studies will follow*****
Other Important Considerations

Winona Health has an active IRB which approves study protocols. IRB approval must be obtained before any data acquisition may commence.

The Winona Health Research Committee consists of physicians and professors from both WSU and St. Mary’s. The research committee’s primary mission is to assist students and mentors with the research process.

There is a computer lab on the Winona Health campus for students to access the Electronic Medical Record. Students will receive training and sign confidentiality documents.

Winona Health hosts a community research fair each spring. Any students participating in research thru Winona Health will be asked to prepare a poster.
Example #1

• The following slide represents a prospective observational database designed study performed by the General Surgery and Pathology service at Winona Health. Adam Goodrick, a student from Creighton University, collected and analyzed the data. The study was subsequently published in a regional peer-reviewed journal. This is an example where the student researcher was recruited to assist the Winona Health physicians in their research interests. This type of opportunity comes about rather sporadically, but we are actively encouraging more and more Winona Health doctors and nurses to embark on such endeavors.
Liver Biopsy Is Indicated During Laparoscopic Cholecystectomy for Patients with Preoperative Imaging Evidence of Fatty Liver

ABSTRACT

Background: Steatohepatitis can progress to cirrhosis and liver failure. Sonogram and computed tomography (CT) scan can suggest the presence of fatty liver (FL) disease. Patients with gallbladder disease frequently have evidence of FL on preoperative imaging. The purpose of this study was to determine whether any preoperative factors can predict the severity of steatohepatitis in patients with preoperative imaging evidence of fatty liver undergoing cholecystectomy.

Methods: A laparoscopic liver biopsy was performed on patients undergoing laparoscopic cholecystectomy who had preoperative imaging evidence of FL. Pathologic severity of steatohepatitis was quantified histologically using the Brunt scoring system based on degree of macrovesicular steatosis, necroinflammatory activity, and periporal fibrosis. Patients’ preoperative demographic and laboratory variables were compared by Brunt score.

Results: In the 2-year study period, 252 patients underwent laparoscopic cholecystectomy. Ninety-four (37.3%) had evidence of FL on preoperative sonogram or CT scan. Sixty-eight of 94 patients (72.3%) underwent liver biopsy consistently with cholecystectomy. Body mass index (BMI), calculated as weight in kilograms divided by height in meters squared, sex, age, and preoperative hepatic function serology values were recorded (serum transaminase, alanine transaminase, bilirubin, albumin, and alkaline phosphatase). Higher BMI (P < .03) and alanine transaminase (P < .001) correlated with the presence of FL on imaging.

Conclusions: Patients with preoperative imaging evidence of FL have varying histologic severity of steatohepatitis. Patients with low preoperative albumin and elevated alkaline phosphatase concentrations had a higher incidence of periporal fibrosis, and an albumin level < 3.5 g/dL was 100% predictive for the presence of fibrosis. No other preoperative variable, including BMI, predicted the presence of fibrosis. No single preoperative factor predicted the overall severity of steatohepatitis in patients undergoing cholecystectomy who had FL seen on preoperative imaging studies. We recommend performing a liver biopsy for all patients undergoing laparoscopic cholecystectomy who demonstrate FL on preoperative imaging.

N”onalcoholic steatohepatitis (NASH), also commonly referred to as nonalcoholic fatty liver disease or hepatic steatosis, is the most common liver disease worldwide. Although the progression from steatohepatitis to cirrhosis is well documented, it is not completely understood. Terminology in recent literature is often used interchangeably, but it is safe to consider the term fatty liver (FL) as a clinical diagnosis based on imaging studies, while NASH is a pathological diagnosis. The histologic diagnosis of steatohepatitis is established when varying degrees of hepatocellular steatosis, lobular inflammation, and periporal fibrosis are present.1 Several risk factors for NASH have been identified, including obesity, diabetes, metabolic syndrome, hyperlipidemia, age, and...
Example #2

• The following slide shows a study conducted thru the Continuous Care Improvement Committee at Winona Health. The goal of this study was to better understand institutional resource utilization in the management of appendicitis. Jenna Lenell, a student at Winona State, gathered 3 years worth of retrospective data. The data was then used to develop a multidisciplinary treatment protocol for appendicitis between the Surgery Department, Emergency Department, and Radiology Department. There is now a prospective phase of data collection ongoing and will continue for the next 2-3 years.

• The poster that follows was presented at the Winona Health Research Fair in April 2016.
Timing of antibiotic administration and surgery in appendicitis: development of a multidisciplinary institutional protocol

Jenna Lenell, Cheryl Peterson, Matthew Broghammer, DO, Vicky Haines, MD, Bethany Corliss da Rocha, MD, Lee Trombetta, MD, FACS

Abstract

Introduction: Management of operating room resources at Winona Health involves minimizing cost and employee stress while maintaining high-quality surgical care. Off-hour surgery for appendicitis can be avoided with no additional morbidity to the patient and possibly improving overall patient safety and duration of hospitalization.

Methods: During phase 1, 109 patients who received appendectomies were retrospectively reviewed. Data points include time from ER presentation to antibiotic administration, time of surgery, and duration of hospitalization. Phase 2 is in progress and will involve development and implementation of an institutional clinical management protocol and prospective data collection for 1 year.

Results: Phase 1 data includes 87 non-perforated appendectomies. The average time each patient spent between ER presentation and operating “in-room” time was 493 minutes, median was 262 minutes. The average time each patient spent between ER presentation and first dose of antibiotics was 590 minutes, median was 245 minutes. The average time each patient spent between ER presentation and hospital discharge was 2,342 minutes, while the median time was 242 minutes. The average time each patient spent between their ER presentation and operating “in-room” time was 410 minutes, while the median time was 242 minutes. The average time each patient spent between their ER presentation to their hospital discharge was 2,342 minutes, while the median time was 242 minutes. The average time each patient spent between their ER presentation to hospital discharge was 2,342 minutes, while the median time was 242 minutes.

Conclusion: Based on this evidence, there is a need for a multi-specialty institutional protocol for the management of appendicitis throughout each patient’s hospital stay. Phase 2 will involve developing and implementing the protocol, and subsequent prospective data collection, for comparison to the phase 1 data.

Methods

This study was designed as a quality improvement initiative under the Continuous Clinical Improvement Committee. This is a dual-phased study. In phase 1 all patients undergoing appendectomy at Winona Health between October 3, 2012 and June 5, 2014 were retrospectively reviewed and will continue to be reviewed through the date of September 30, 2015. Data points included presence of perforation, ER presentation time category, diagnostic modality, operating “in-room” time, in-room hour category, total time (in minutes) from ER presentation to operating “in-room” time, first antibiotic dose, date/approximate time of hospital discharge, and total time (in minutes) from ER presentation to hospital discharge. Time categories were represented with letters A, B, and C: A) 7:00-16:00, B) 16:00-22:00, C) 22:00-7:00. Time category C is considered “off-hours.” Of the non-perforated appendicitis cases, the time from ER presentation to operating “in-room” time, total time (in minutes) from ER presentation to antibiotic dose, and time (in minutes) from ER presentation to hospital discharge were calculated.

Phase 2 of this study will involve the development of a multidisciplinary institutional protocol for managing appendicitis from presentation to discharge. Once this protocol is developed, the project will be presented to the Winona Health Management Committee, CQI Committee, and Medical Staff. The phase 2 protocol will involve collaboration between the Emergency Department, General Surgery Service, Radiology, and Operating Room.

Conclusions

This phase 2 data will show significant time delay from presentation to antibiotic administration as well as a high percentage of “off-hours” appendectomies. During phase 2, several clinical goals will be pursued:

1) Reduction of the median time of antibiotic administration to < 120 minutes from presentation.
2) Reduction of off-hours operating room utilization to < 5% of appendectomy cases.
3) Maintaining or even reducing duration of hospital stay.
4) Standardizing and standardizing appendectomy management from presentation to discharge to improve patient satisfaction.

Acknowledgments

Michael Kleinow-assistance with Microsoft Excel equations

References


Table 1. Time durations.

<table>
<thead>
<tr>
<th>Category</th>
<th>Operating “in-room” time</th>
<th>Total time from ER presentation to antibiotic dose</th>
<th>Total time from ER presentation to hospital discharge</th>
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<tr>
<td>Total</td>
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Table 2. Time categories.

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Table 3. Time from ER presentation to hospital discharge.

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Table 4. Time from ER presentation to antibiotic dose.

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The purpose of this study is to minimize the unnecessary use of operating room resources between the hours of 10:00pm and 7:00am, while maximizing excellent patient outcomes and minimizing length of hospital stay.

Purpose

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Results

During the study period, 109 appendectomies were performed. 4 of these appendectomies were performed incidentally with another planned surgical procedure, and were hence excluded, along with 4 cases which data points could not be determined. Of all 101 patients undergoing appendectomy and with all data points determined, 2 were diagnosed by use of ultrasound (US), 98 were diagnosed by use of computed tomography (CT), and 14 had a perforated appendix. The 30 non-perforated appendicitides were divided into 2 groups: the 10 appendectomies performed prior to the institution of the new protocol, and the 20 appendectomies performed after the institution of the new protocol. The 20 appendectomies performed after the institution of the new protocol were compared to the 10 appendectomies performed prior to the institution of the new protocol.

Average time each patient spent between ER presentation and operating “in-room” time was 410 minutes, while the median time was 242 minutes. The average time each patient spent between ER presentation and first dose of antibiotics was 590 minutes, while the median was 241 minutes. The average time each patient spent between their ER presentation to their hospital discharge was 2,342 minutes, while the median time was 1,399 minutes.

Within the ER presentation hour category of patients with non-perforated appendicitides, there were 42 during A, 23 during B, and 22 during C. Within the operating “in-room” hour category of patients with non-perforated appendicitides, there were 33 during A, 23 during B, and 29 during C. A) represents time between 7:00-16:00, B) represents time between 16:00-22:00, and C) represents time between 22:00-7:00.
Example #3

- In the example on the next slide, Jennifer Bayer, a PhD candidate from the University of Iowa, needed a source of patients for her thesis study on the use of Yoga in treating chronic back pain. She designed a process by which primary care providers at Winona Health could refer patients with chronic back pain to her study. This required dual IRB approval from the University of Iowa and Winona Health. This is an example of how Winona Health can assist students with their research requirements and provide access to patients and information. Because of its outstanding design, this study won 2nd place overall at the Winona Health Research Fair in April 2016.
An Eight-Week Forrest Yoga Intervention for Chronic Low Back Pain: Effect on Pain, Disability, and Psychological Outcomes

Authors: Chelsea Ritter, Jennifer Bayer, and Lee Trombetta
Winona State University, University of Iowa, Winona Health

Abstract

Background: Current chronic low back pain treatments do not adequately relieve patients’ pain or distress. Preliminary yoga studies show promising potential for long-term relief.

Method: Participants will be randomized to receive eight weeks of yoga or usual care. Pain and psychological outcomes will be measured before, during, and after the intervention. A follow-up assessment will also occur eight weeks after the intervention completes.

Anticipated Results: This intervention will decrease pain severity, pain-related disability, and improve a variety of psychological outcomes.

Introduction

People with chronic low back pain seek out medical care at high rates, yet medical treatments often fail to relieve the patients of pain. Patients with comorbid psychological disorders, such as depression or anxiety, experience worse outcomes. Clinical care guidelines recommend both physical and psychological interventions such as physical therapy and psychotherapy, but these treatments have limited success.

Yoga has been shown to reduce pain and psychological distress associated with pain, but the styles of yoga studied were not designed to address back pain. This study, on the other hand, investigates Forrest Yoga, a style of yoga specifically created to address back pain.

Purpose

To investigate the feasibility and efficacy of an eight-week Forrest Yoga intervention in reducing pain-related disability and psychological inflexibility. Changes in pain severity, medication and substance use, fear of movement, catastrophizing, social support, depression, and anxiety will also be assessed.

Winona Health has partnered with the University of Iowa to bring this yoga intervention to the Conservative Management Clinic back pain patients.

Methods

Week 0 (baseline assessment)

Week 1 (fourth week assessment)

Week 3 (two-week assessment)

Week 5 (post-intervention assessment)

Week 6 (four-week follow-up assessment)

Week 8 (post-intervention assessment)

Week 10 (four-week follow-up assessment)

Design: Randomized, controlled trial

Participants: 100 participants, referred from the Conservative Management Clinic, will be consented, screened, and randomized to the yoga or usual care group.

Assessments: Will be completed at four time points: baseline and four-, eight-, and sixteen-weeks later. Assessments include measures of pain-related disability and psychological inflexibility, as well as pain severity, substance use, fear of movement, catastrophizing, social support, depression, and anxiety. Additionally, medication use and attendance at medical appointments will be extracted from participants’ electronic medical records.

Data Analysis: Mixed-effects models will be used to test for differences both within and between groups over time.

Anticipated Results

Feasibility

- 20% or less drop out
- Yoga participants attend 60% of yoga classes.

Pain Related Outcomes

- The yoga group will have significant reductions in functional disability as well as pain severity and use of medication or substances to manage their pain.
- The usual care group will have no change in these outcomes over time.
- There will be significant between-group differences at eight weeks.

Psychological Outcomes

- The yoga group will have significant increases in psychological flexibility as well as decreases in fear of movement and pain catastrophizing.
- The usual care alone group will experience no change with regard to psychological flexibility, pain catastrophizing, or fear of movement.
- There will be significant between-group differences at eight weeks.
- Additionally, the yoga group will improve on measures of social support, anxiety, and depression while the usual care group will remain constant on these measures.

Reference

[Insert references here]
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