Endovascular Infusion of Lidocaine and Steroids in the Middle Meningeal Artery for Pain Management in Spontaneous Subarachnoid Hemorrhage Patients

(MISSY)

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The University of Texas Medical Branch at Galveston
Minimal Risk Consent Form

Protocol Title: Endovascular Infusion of Lidocaine and Steroids in the Middle Meningeal Artery for Pain Management in Spontaneous Subarachnoid Hemorrhage Patients

IRB Number: 25-0010

Principal Investigator: Peter Kan MD

Study Contact: Robert Garcia MD

Please read this consent form carefully, and do not hesitate to contact the principal investigator with any questions or concerns you may have before deciding whether to participate. Taking part in this research study is voluntary. *You do not need to participate, and if you start the study and change your mind, you may stop at any time.*

Your doctor is a research investigator in this study. Your doctor cares about both your medical care and running this research study. At any time, you may discuss your care with another doctor who is not part of this research study. You do not have to take part in any research study offered by your doctor. You can say no, and you will still get the medical care you need.

KEY INFORMATION

The key information below can help you learn more about this research study. It can also help you decide whether or not to take part in the research. Please read the entire consent form or have someone read it with you. If there is anything that you do not understand, please talk to the study doctor or team to have your questions answered before signing the consent form

Voluntary Participation & Right to Withdraw	Your decision to be in this study is voluntary. You can decide not to take part in this research study. You can also choose to leave the research study at any time
Purpose	This study wants to evaluate the effectiveness of infusion of lidocaine and/or steroids in pain management after a subarachnoid hemorrhage (SAH). This is a type of brain bleed that can cause severe headaches.
Key Reasonable Foreseeable Risks and Discomforts	Participating in this study may result in the following risks and/or discomforts: access site bleeding, bruising or hematoma, vascular damage or spasms or allergic response to use of iodinated radiographic contrasts. Serious adverse effects include death, clots forming in

	the leg, post-procedure bleeding, renal failure, blood vessel perforation, and vessel occlusion from clots.
Reasonable Expected Benefits	By participating in this study there is a possibility you may experience a successful relief of pain caused by your subarachnoid hemorrhage. However, there is no guarantee that this treatment will help you. Even if you do not receive any direct benefits from being in this study, we hope the information learned from this study will benefit other people with similar conditions in the future.
Length of Participation	This study will last 6 months from time of presentation to last follow-up. Timeline of Follow-ups after discharge: • 1-month Follow-up • 3-month Follow-up • 6-month Follow-up
Procedures	If you choose to participate in this study, you will be asked to undergo standard-of-care angiography routinely performed in all spontaneous subarachnoid hemorrhage cases. An angiography is a test where doctors take pictures of the blood vessels in your brain. During these procedures, the middle meningeal artery will be selected, and infusion of lidocaine and/or dexamethasone (steroid) will be infused at appropriate dose over 10 minutes.

This overview only includes some of the information you need before deciding whether to take part. Additional details are given in the full consent document, which can be found on the following pages. Be sure to review the rest of this consent form before deciding about participation.

DETAILED INFORMATION

Why is this study being done?

This study is being done to evaluate the effectiveness of infusion of lidocaine and/or steroids in pain management after a subarachnoid hemorrhage. We hypothesize that directly infusing local anesthetics, with or without steroids, into the middle meningeal artery (MMA) will help reduce pain and inflammation by acting on the nerves in the dura mater, the tough outer layer covering the brain.

The dura mater has many pain-sensitive nerves, most importantly, the trigeminal nerve. This makes the dura mater and important site for pain modulation in headache disorders. Local anesthetics can inhibit pain signaling by blocking sodium channels in peripheral nerve terminals, thereby preventing them from sending pain messages to the brain. Concurrently, the addition of steroids could reduce local neuroinflammation by blocking the release of certain chemicals like interleukin-6 (IL-6), which is known to cause swelling and make pain worse.

By targeting the MMA during angiographic procedures (a type of imaging test involving blood vessels), we might be able to relieve pain quickly while also reducing long-term inflammation. Many groups have already shown benefit with the injection of lidocaine with or without steroids into the MMA for conditions such as intractable headaches, migraines and pain related to chronic subdural hematoma. However, no data on this approach for SAH pain has been published. This approach could be a new and effective way to treat severe, persistent headaches, particularly those that happen after a subarachnoid hemorrhage.

A description of this clinical trial will be available on www.ClinicalTrials.gov, as required by U.S. Law. This website will not include information that can identify you. At most, the website will include a summary of the results. You can search this website at any time.

Am I required to participate?

No, joining this study is completely your choice. Your participation in this study is completely voluntary. You may refuse to participate or withdraw your participation in this research study at any time. There will be no penalties or loss of any benefits you're entitled to. Refusing to participate or withdrawing from this study will not impact your medical care at UTMB. The alternative is not to participate in the study.

How long will this study last?

If you agree to take part, your participation will last for 6 months and will involve one procedure and 3 follow-up visits.

This study will take place between February 14, 2025, and February 28, 2029.

How many people will participate in this study?

About 15 people will take part in the study at UTMB.

What tests and procedures are involved in this research study?
If you agree to participate in this study and sign this consent form, you will be asked to complete the following tests and procedures:

- Baseline Visual Analog Scale (VAS) before your routine angiography. The VAS is a pain intensity measurement tool that uses a 100 mm line to help patients rate their pain. It is a standard test for SAH care.
- Standard-of-care angiography: this is a routine procedure done for all spontaneous subarachnoid hemorrhage patients, whether they are in the study or not. It helps doctors examine the blood vessels in your brain.
- Infusion Protocol – This section will be performed strictly for this project
    - The infusion will be given slowly to ensure the medication is delivered properly, with continuous monitoring for immediate side effects.
    - Each medication will be administered over 10 minutes through the middle meningeal artery (MMA).
    - You will receive one of three options:
        - Lidocaine (50 mg)
        - Lidocaine (50 mg) + Dexamethasone (10 mg) (given one after the other)
        - No infusion (control group)
- Postoperative VAS scoring: Your pain level will be measured every 4 hours after the procedure. It is part of standard SAH care.
- Morphine Equivalents will be monitored postoperatively: Doctors will track the amount of opiates you use for pain relief after the procedure. It is part of standard SAH care.
- Follow-Up Appointments (Routine SAH Care):
    - 1 Month After Discharge: Doctors will check your pain levels (VAS score), opiate use (Morphine Equivalent), other pain medications, and any side effects.
    - 3 Months After Discharge: Another follow-up to assess the same factors.
    - 6 Months After Discharge: Final follow-up to assess the same factors.

What are the possible risks for participating in this study?

There are both risks and benefits to taking part in this study. It is important for you to think carefully about these as you make your decision.

Privacy Risk
Your participation in this research will be held strictly confidential, and only a code number will be used to identify your stored data. However, because there will be a link between the code and your identity, confidentiality cannot be guaranteed.

To protect your information, we will:

- Store your personal details in a secure facility with limited access and password protection.
- Use a firewall-protected computer system at UTMB to prevent unauthorized access.

Procedural Risks Associated with Standard Angiography

There are certain risks that can arise from standard angiography including access site bleeding, bruising or hematoma, vascular damage or spasms or allergic response to use of iodinated radiographic contrasts.

Serious adverse effects include death, clots forming in the leg, post-procedure bleeding, renal failure, blood vessel perforation, and vessel occlusion from clots.

A **40 mg dose of lidocaine** (typically ~2–4 mL of 1% solution) is within the safe range for **local or regional anesthesia**, but if inadvertently injected intravascularly, it could still cause **mild systemic effects** like **dizziness, lightheadedness, and perioral numbness**, especially in sensitive individuals. While unlikely to cause severe **cardiotoxicity or seizures**, rapid administration into the bloodstream may still trigger **low blood pressure or low heart rate** due to sodium channel blockade.

A **20 mg dose of dexamethasone** is commonly used for **anti-inflammatory or anti-edema purposes**, but if injected intravascularly, it may cause **temporary high blood sugar, mild high blood pressure, or flushing**. While systemic toxicity at this dose is minimal, repeated high-dose exposure could contribute to **lower cortisol level (hormone produce by the adrenal glands) or immunosuppression** over time.

What are the potential benefits of participating in this study?
The main possible benefit of your participation in this study is pain relief from the subarachnoid hemorrhage. However, there is no guarantee or promise that you will receive any benefit from this study. Even if you do not personally benefit, we hope the information learned from this study will benefit other people with similar conditions in the future.

Will I be reimbursed for participating in this study?
No, there will be no reimbursement for participation in this study.

If I agree to participate in this research, can I be removed from the study without my consent?
Yes, the research team or sponsor can remove you from the research without your approval. Some reasons for removal include:

- Missing appointments or not following instructions
- If the researcher believes it is no longer safe for you to continue.

How will my information be protected?
Your privacy is very important and your participation in this study will be kept confidential. However, absolute confidentiality cannot be guaranteed.

To protect your information:

- Your health data will be labeled with a code instead of your name whenever possible.

- If the study results are shared in medical journals or conferences, you will not be identified.

What happens to the data collected in the study?
If you join this study, your data will be used to answer the research question and publish the findings of this study. You will not own your research data. If researchers use your data to create a new product or idea, including those that may have commercial value, you will not financially benefit from those efforts.

How Will My Data Be Used and Shared?
UTMB researchers and their collaborators may use the data collected in this study for future research purposes and may share some of the data with others. UTMB will do our best to protect and maintain your data in a safe way. One of the ways we protect data is by limiting the uses of the information and the type of information that is shared, especially your personal information. This may occur through de-identifying the data, data sharing agreements and review by oversight groups within UTMB.

In some cases, data linked to identifiable information (such as your name, address or medical record number) may be used for future research purposes at UTMB, but only after the research has been reviewed and approved by the UTMB Institutional Review Board (IRB). The UTMB IRB will review whether additional consent from you is required.

Generally, if your data is used/shared without any personal identifiers or with information that is less likely to identify you (such as the date of a procedure), further review and approval is not needed.

Who May Access My Data?
Sharing data is part of research and may increase what we can learn from this study. Often, data sharing is required as a condition of funding or for publishing study results. It also is needed to allow other researchers to validate study findings and to come up with new ideas. Your data may be shared with researchers at UTMB and other institutions, for-profit companies, sponsors, government agencies, and other research partners. Your data may also be put in government or other databases/repositories.

Because science constantly advances, we do not yet know what future use of research data may include. This future research may be unrelated to the current study and may include outside collaborators.

Data sharing could change over time and may continue after the study ends.

The use and sharing of your data is required for participation in this research study. If you are not comfortable with the use and sharing of your data in future research without further consent, you should not participate in this study.

How will my privacy be protected?

Your privacy is very important and we will do our best to keep your information confidential. However, absolute confidentiality cannot be guaranteed.

By signing this consent form, you are giving us permission (this is called your "authorization") to collect, use, and disclose your personal health information for the study. We have strict regulations, including Federal and State laws, designed to protect your personal information. This includes information learned from the procedures described in this consent form. The research team may also collect other information from you, including your name, your address, your date of birth, and information from your medical records. Please understand that health information used and disclosed may include information relating to HIV infection, drug abuse, alcohol abuse, behavioral health, and psychiatric care.

Other professionals at UTMB, such as your doctor(s) and the Institutional Review Board, may also see your information. We make this information available to your doctors for your safety. Please inform your doctor if you think this study might affect your medical care.

People outside of UTMB may also need to see and review your information for this study. UTMB does not allow identifiable information collected during the study to be released to people outside of UTMB except as required by law or otherwise stated in this consent form. Examples include government agencies, such as the Food and Drug Administration (FDA), individuals who monitor the study for safety purposes, other location sites in the study, and companies that sponsor (help organize or pay for) the study.

We cannot do this study and cannot use and distribute your information without your authorization. You do not have to sign this form. However, if you choose not to sign it, you cannot be in the study. Your care and the benefits you receive from UTMB will not be affected if you decide not to be in the study.

You may change your mind and revoke (take back) this authorization at any time. Even if you revoke this authorization, researchers may still use or disclose health information they already have obtained about you as necessary to maintain the integrity or reliability of the current research. To revoke this Authorization, you must contact the principal investigator in writing.

How long does this authorization to use my information last?
When you sign this form, you agree to let us collect, produce, and share health information about you as we described in this form. Your authorization does not end.

Who can I contact with questions about this research study?
If you have any questions, concerns, or complaints before, during, or after the research study, or if you need to report a research-related injury or bad side effect, you should immediately contact Peter Kan MD at (409) 772-0330 or, if after office hours, at the on-

call resident pager at (409) 643-0548 for Galveston campus or (346) 978-7653 for Clearlake Campus.

This study has been approved by the University of Texas Medical Branch Institutional Review Board (IRB). If you have any concerns, complaints, suggestions, or questions regarding your rights as a participant participating in this research study, or if you would like more information about the protection of human subjects in research, you may contact the IRB office at irb@utmb.edu.

Consent to Participate
Sign below only if you understand the information given to you about the research and you choose to take part in this research study. To date, there is limited research for injections into this part of the brain. Make sure that all your questions have been answered. If you decide to take part in this research study, a copy of this signed consent form will be given to you.

Printed Name of Subject	Signature of Subject	Date	Time

Printed Name of Legally Authorized Representative	Signature of Legally Authorized Representative	Date	Time

With language that is understandable and appropriate, I have discussed this project and the items listed above with the participant.

Printed Name of Person Obtaining Informed Consent	Signature of Person Obtaining Informed Consent	Date	Time

Interpreter Statement:
I have interpreted this consent form into a language understandable to the participant and the participant has agreed to participate as indicated by their signature on the associated short form:

Printed Name of Interpreter	Signature of Interpreter	Date	Time

If a witness is required:

Printed Name of Witness	Signature of Witness	Date	Time