

AMERICAN SEEG CONSORTIUM (ASC)
MINUTES OF CONFERENCE CALL
1-2 PM, WED OCT 9, 2019

Introduction

Dr Kalamangalam (UF) introduced the idea of ASC arising from informal discussions amongst a few ACNS members about a year ago. A formal proposal to set up an ACNS-supported 'Consortium' – modelled along the lines of other such consortia such as the CCEMRC - was subsequently approved by the ACNS Council. The first meeting of the ASC was a small in-person meeting at the annual ACNS meeting in Las Vegas (Feb 2019). In recent months, the ASC has obtained an email ID, an office and some administrative assistance, and the ASC will be coordinated from these facilities at University of Florida for now. As quoted before, the idea behind the ASC is: *The technique of SEEG is largely supplanting the subdural grid approach in the invasive evaluation of epilepsy surgical candidates in American centers. As experience of SEEG builds, so do unresolved questions regarding its technical, clinical and scientific aspects. The SEEG Consortium of the ACNS will address several priority items and attempt to create new clinical and scientific knowledge and practical consensus regarding SEEG utilization in epilepsy.* It was emphasized that the initial goals of the ASC would be to evaluate evidence and practice protocols across US centers experience and integrate those into ACNS-endorsed position statements and guidelines that would be published in the Journal of Clinical Neurophysiology (JCNP). Though the ASC is not part of the ACNS, it will be supported by it (Megan Hille from the ACNS was on this call). The ACNS website will have links to the ASC website, and meeting time and space will be provided for in-person meetings at the annual ACNS conferences.

Following this introduction, ASC members on the call briefly introduced themselves.

Initial discussions

Dr Gotman remarked on the 'explosive' interest in SEEG in the United States, and wondered about the reasons. He also emphasized that any development work on SEEG should involve European centers who have been doing SEEG for decades.

Dr Willie: There are several dynamics at play in the United States. One was having a champion, someone like Jorge (Dr Gonzalez-Martinez) and early adopters who helped bring it and present the data to American audience. And there's emerging data that it's more effective, at least in producing epilepsy surgeries that are as or more effective than grid. Also, there are more minimally invasive treatments these days to epilepsy than just open resection, and matching the intracranial monitoring to a minimally invasive therapy has been a dynamic. And then the final dynamic is the fact that we have new navigation and stereotactic devices that make it a lot easier. When SEEG was developed in Europe, everyone was using Talairach grids and that wasn't something that available in the United States or easy to use but with the advent of stereotactic robotics, SEEG is much easier to adopt. The network understanding of epilepsy is becoming much more accepted as an understanding of epilepsy as opposed to just surface understanding, which may have worked for a lot of temporal lobe epilepsy.

Dr Gonzalez-Martinez: What is the definition of SEEG in North America? What we are calling an SEEG procedure is different in different centers. My concern is what a lot of centers are reporting is not SEEG per se as what the Europeans call it but it is just placement of depth electrodes. And this is not what we should call SEEG. Define what SEEG is in North America, and take it from there.

Epilepsy center survey of SEEG practice

Dr Kalamangalam: I think some of these questions have been posed in Jay Gavvala's questionnaire, which is the first agenda item for this call. For example, one of your questions was "Why did your center adopt this?"

Dr Gavvala: We certainly didn't ask about defining SEEG although that would have been an interesting point. We did ask what the motivation was for developing a SEEG program at each institution. It will get at some of what was discussed but it won't get the full picture, but I think it's a start.

Technical guidelines

Dr Tatum: We (including Dr Schuele) were involved in developing something with AES. While trends and clinical indications change, a lot of the technical approach will not. So this is more of a foundational sort of guideline, alongside with what ACNS is known for, as opposed to more of trending and what happens over time, what happens with clinical education experience.

Dr Thompson: There was a consortium of French centers that proposed and came up with a number of guidelines. The North American centers were moving towards it, and they wanted to put some stuff on paper to help guide them.

Dr Ver Hoef: I was about to recommend the same one. They do lay down a lot of these ideas of what they think SEEG is and how to approach it. It's called "French Guidelines on Stereoelectroencephalography" in *Clinical Neurophysiology*, 2018.

Dr Kalamangalam: What we come up with will be an amalgam, of what we know from the literature and what we gain from our own experiences. It appears that the AES joint effort (with Drs Tatum, Dr Schuele and others) is going to be something that addresses subdural grids as well and perhaps not as specific to SEEG. The question remains whether something specific to SEEG should be looked at. I think it's useful for the SEEG aspect to at least be separated out in some sort of sub-paper or sub-statement. Just a suggestion. We'll hear more when Stephan (Dr Schuele) updates the group with any further information.

Nomenclature guidelines

Dr Stone: This grew out of the fact that when we started our Stereo EEG program here one of the early learning hurdles we had was just trying to get everyone here speaking the same language instead of just naming electrodes a, b, c. I created a relatively simple standardized nomenclature that was anatomically based, and we've been using it here. I think I presented it to your meeting and there was some interest. So I actually have been working on a paper to submit. It's a relatively simple paper with diagrams to explain the nomenclature with some examples. If multiple centers were using a similar nomenclature it might provide some interesting research and clinical collaborative opportunities.

Dr Willie: One other thing I would add that we've been using, it's a standardized abbreviations for cortex and sulci is available in a book by Michael Petrides, "The Human Cerebral Cortex: an MRI Atlas of the Sulci and Gyri in MNI Stereotaxic Space."

Dr Stone: I'd be happy to shoot out the draft paper to this consortium if you want to look at it.

Dr Kalamangalam: Each of these projects should have a lead, and the lead can decide who they want to partner with, I would suggest that they partner with 3-4 other institutions, maybe one person from each. And then come up as a smaller group with something that you can then share with the rest of the group. And eventually this becomes a position paper that is authored by the small group on behalf of the consortium. That way, progress can be made in small groups and tailored to peoples' individual interests. I think the CCEMRC has followed this formula successfully.

Dr Gotman: To be sure that these guidelines are adopted by the world, I think it would be best if we could involve in this working group (the Consortium) with people who have done SEEG for a long time (Europeans, etc.)

Dr Kalamangalam: I think it would be a little difficult [to involve the international community] because we – the ASC – are just starting and don't really have a structure right now. But for the smaller groups I think it's a good idea. People should feel free to bring in the expertise they need.

Let's move on. I will leave the nomenclature project with you Scellig.

Placement schemes

Dr Kalamangalam: This is a neurosurgically-weighted topic, with plenty of variation. A lot of material needs to be looked at here - spacing of electrodes, how many electrodes, different stereotactic techniques, electrode visualization after implants, etc.

Indications/Canonical placement schemes

Dr Kalamangalam: Indications for subdural grid electrodes were drawn up decades ago. Is there anything different about SEEG? Is it important for it to come out with some sort of statement for when SEEG is indicated? Related, how do you investigate a syndrome? We all follow certain schemes, but I'm not sure there is anything systematic in the literature.

Dr Willie: Another wrinkle to all of this depends on the surgical strategy will be. Can think of 3 different ways to implant the frontal lobe depending on what you're going to do. There can be room for approaching the same problem in different ways at different institutions depending on what the comfort level is with the ultimate surgical therapy.

(unidentified voice): What if you looked at every electrode from a rational perspective? Is it a conventional electrode, is it based on EEG, is it based on lesion? If there is a way of grouping them with that type of information, maybe we can refine our implantation schemes. I agree there should be a space for different ways of looking at it.

Data interpretation; Stimulation for EZ

Dr Kalamangalam: These are large evolving fields.

Data sharing

Dr Tandon: I think this joint effort is great and it is very important for the field. We never had common standards, and as a consequence data from several different centers are unique. It would be wonderful

for us, as a community, to have a common language that expresses both our intent as well as our findings and obviously the outcome. We are still a very small field. How do we conceive of sharing ideas of how to do things and also data? We need to reach a way of synthesizing results across centers. We can't really define "good" if there is no outcome. We all have different opinions, but it is only by knowing which approaches lead to better outcomes that we understand the right way.

Dr Kalamangalam: This is a fast-forwarded goal, but yes, I completely agree. Presently we are still trying to understand which areas require evidence.

Dr Ver Hoef: I think the point of analyzing this big data problem is important. If we wait to all get on the same page before organizing, it will never happen. I am interested to see how different people approach the nomenclature problem. If we can have a limited number of approaches that centers can adopt is better than the problem of people jumping into this and figuring out our own way.

Housekeeping

Dr Kalamangalam: Right now we are running the Consortium informally and free of cost but eventually we will have to factor administrative costs with a subscription fee (like other ACNS Consortia) and perhaps have parts of the website password-protected. We are a large group already, so it is important for us to have a smaller (executive) group that takes decisions on matters that have been circulated. These are some things we can include in the future. We have a website www.consortiumseeg.org that is not published yet, and after today's call we will publish the website updated with the minutes of this meeting. We will have a place there for relevant literature and developing projects. Please forward anything that you think would be useful and eventually I will upload it to the website.

Wrap up

Dr Kalamangalam: Can I just ask people to take on these various projects. I think we should stay flexible and open, but I think it is important that folks sign up for this so we can make progress. That is my one request.

Schedule for next meetings is on your agenda:

- In-person meeting at ACNS 2020, New Orleans LA
- Conference call summer 2020

Dr Gotman: I would encourage as much participation as possible to the live meeting!!
