Acupuncture Versus Opioids for Pain Relief: An Expert Discussion

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INTRODUCTION

A GROUP OF EXPERTS gathered for a roundtable discussion to address current challenges in complementary therapy research and the use of acupuncture, especially in acute-pain challenges to prevent the opioid gateway. Battlefield Acupuncture (BFA), a very popular, auricular, 10-point needle technique, is throttling forward in the Veterans Administration (VA), Department of Defense (DoD), and civilian community as a very flexible challenge to the opioid dilemma. There is still plenty of room to gather more comprehensive data and tighten up the evidence. The experts discussed the merits of electroacupuncture (EA) and the transition to auricular therapy. Previously, most of the acute-pain literature was on EA. Why was there a shift when there were such plentiful data? As we struggle with the opioid crisis, it is important to remember its first rise occurred during the American Civil war, and the truth is that the dismal first wave of this crisis is still sweeping through generation after generation of patients. We need all the help we can get; whether it is EA or auriculotherapy. We need to optimize our tactics and make sure that our therapies are not misaligned. Acupuncture is colliding with the opioid crisis not by accident but by necessity. Read through this fascinating roundtable discussion and let Medical Acupuncture be “on lock mode”

as you don’t want to stray from this exciting and stimulating discussion.

WEN G. CHEN: To begin, this discussion stems from the need to address current challenges in complementary therapy research—particularly issues related to acupuncture. The current opioid crisis presents an opportunity for us to understand the medical usage of acupuncture as well as the science, even more.

Certainly, there are a lot of research projects that have already been looking at the role of acupuncture for chronic pain. What has not been studied as much is the role of acupuncture in the very acute setting, where acupuncture can induce instant pain relief. If this holds true, acupuncture could reduce the burden of reliance on opiate-based medications, because, when patients go into clinical care settings, these patients really want instant relief. And that is where the opiate-based medications come in—to give instant pain relief.

So, that is where we thought we could focus this roundtable: What do we already know about the role of acupuncture in acute events for pain relief? What does the current literature say with regard to acupuncture affecting acute pain or even opiate overdoses? What other efforts do we need in order to help to move the clinical practice policies further?

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First, let's discuss your observations about the roles of acupuncture for pain relief in the acute setting.

BENJAMIN KLIGLER: In the U.S. VA, we are very actively disseminating BFA, which I am sure everybody is familiar with—the 10-point auricular acupuncture technique that originated with Dr. Niemtzow's work in the Air Force, which was spread fairly widely across the DoD and VA as part of a joint congressionally funded initiative that the VA has continued to spread.

So, anecdotally, the results that we see from BFA for acute pain and acute exacerbation of chronic pain are really impressive. There are some early published reports on immediate post-treatment outcomes and then 30-day outcomes. BFA is looking quite promising. And, we are in the middle of a much larger initiative that we are using in the VA to try to gather more comprehensive data. These are pragmatic data from standard clinical treatments. We are looking for more-robust evidence of the impact of BFA on a large scale. It is hoped that we are starting to produce more-rigorous evidence regarding acute pain and acute chronic pain.

There is also some early evidence of effectiveness, particularly from the Allina Health System in Minnesota, and some other systems, that are studying impact of acupuncture in the emergency room [ER] and the potential to reduce opioid prescribing and opioid initiation in the ER. This is another subject that, personally, I am really interested in and that I hope we will have the opportunity to study more thoroughly.

HELENE LANGEVIN: Thank you, Dr. Kligler. That is a great way to start. I would like to just raise a point of clarification regarding terminology. I think that the current enthusiasm and emphasis on BFA techniques regarding auricular points is great. It is really nice to see that that is being disseminated and studied in such a way that large numbers of patients are going to be tested. That is wonderful.

Previously, there was a longstanding interest in using acupuncture for treating acute pain, going back to the very beginning of research in acupuncture. However, most of the acute-pain literature was on EA. So, there are a lot of data on that, going back to the early days when acupuncture was used for treating postoperative dental pain and things like that.

Now there is a focus on non-EA. I find that an interesting shift. I also think it warrants some discussion about electrical stimulation versus no electrical stimulation.

DR. CHEN: That is a very interesting point of view, Dr. Langevin. Are you saying that people have not compared with or without electricity—EA versus manual acupuncture, for acute pain?

DR. LANGEVIN: Very little. The Society for Acupuncture Research [SAR] published a white paper on this a couple of

years ago, wherein we looked at the literature comparing EA versus manual acupuncture. We found very few head-to-head comparisons in which everything else stayed the same in terms of the points that were used, the depths of needling, etc., wherein people just asked, “does it make a difference if you put electricity on this?” This is an important consideration.

DR. CHEN: An interesting point of view. Do you think it is because there is no difference, therefore, that people do not compare this further? Or, do you think there are merits for doing head-to-head comparisons?

DR. LANGEVIN: I think it is worth looking at. There are very few studies that have compared manual versus electrical techniques with no other confounders, wherein everything else stayed the same—the same location of needling, the same depth of needling, etc.

So, there are not enough data to be able to say conclusively, but there were a few studies suggesting that EA might have been better for acute pain—maybe not for chronic pain, but, again, there were not a lot of data.

It is a very different procedure when one uses electrical stimulation. And I am curious about the acupuncture protocols. Do they get performed with electrical stimulation, or, is that considered unnecessary?

NADIA VOLF: I just want to mention that different kinds of electrical stimulation of acupuncture points have different mechanisms of action and require different protocols. A low-frequency electrical stimulation, between 2 and 4 Hz, applied on the distal points, leads to the analgesic effect through the secretion of endogenous opioids, requiring at least 25 minutes of stimulation. That is why, in acupuncture protocols, the low-frequency electrical stimulation of distal points starts 25 minutes before surgery. Electrical stimulation of local points requires high-frequency electrical stimulation that activates the gate-control system immediately and starts right before the intervention when a patient is already in the surgery room. Electrical stimulation of auricular points requires a 15-Hz frequency. So, there are some particular specifics regarding different types of electrical stimulation applied on acupuncture points, with electrical stimulation of points especially for anesthesia.

DR. LANGEVIN: And, of course, now, there is a lot of interest in vagal nerve—right—stimulation that is not even acupuncture-related. I am curious—on the battlefield, in the clinical situation, at the VA, or in the military—is electrical stimulation not used?

JOSEPH M. HELMS: When we teach military and VA doctors, we train them routinely to include electrical stimulation on body points, especially for chronic pain.

DR. LANGEVIN: In the ear?

DR. HELMS: Not in the ear. In the ear, we use either straight needles or indwelling needles.

There are a few new 2-, 3- or 5-point stimulators that Dr. Niemtow knows more about. They have been discussed and tried for auricular stimulation, but I do not know if there are any academic evaluations of them. Dr. Niemtow, where are we with enduring electrical stimulation on auricular points?

DR. RICHARD C. NIEMTOW: There are not many evaluations. Right now, there are people doing various types of electrical stimulation on the ear with either traditional stimulators or units that people can wear. However, it is complicated.

And, in response to Dr. Langevin's question about why there was a switch to interest in, for instance, BFA, rather than EA, the reason was purely convenience. Putting five needles in the ear on the battlefield is much simpler, even during an actual combat situation, than the patient going to a location to receive electrical stimulation on body points for a half-hour, which is not practical in many combat situations.

However, once the individual gets to a field hospital, practitioners do use EA. Currently, in the armed forces and the VA, the development of acupuncture is rapid and convenient, and it is easy to teach people how to do it.

EA certainly has its merits and can be used to a patient's advantage. However, I think, right now, for many people—especially with rapid treatments and shorter interactions with patients—the requirement to have a patient visit in 20 minutes, rather than a half-hour or 45 minutes, is beneficial to the system.

And, I will say that EA has been very popular with some outstanding results.

DR. LANGEVIN: Dr. Kligler, what about at the VA?

DR. KLIGLER: To the best of my knowledge, the vast majority of people are not using electrostimulation as part of the BFA protocol.

There are medical acupuncturists doing body treatments and licensed acupuncturists across the VA who are certainly using electrostimulation. And I agree that—putting aside the question of auricular acupuncture, Dr. Langevin—that it is a very important research question: “Is there a relative advantage or not of electrostimulation on body points?” Because, when you talk about it in clinical settings, it is one of the biggest topics that people argue about across the spectrum.

And there is very little evidence-based guidance for what situations you might use electrostimulation—as opposed to not using it. So, it becomes a question of who one was trained by—and that leads to: “What did he or she believe? What do I believe? What do I like to do?”

DR. LANGEVIN: Yes, we were shocked by how little evidence there was, really.

DR. KLIGLER: Yes. And for those of us that do it clinically, sometimes we do see electrostimulation boost that initial impact. If you are talking about putting somebody in an ER to treat acute pain to prevent the necessity for an opioid prescription, it becomes an even more important question.

DR. CHEN: Thank you. We should certainly understand more about the role of electricity in acupuncture manipulation for, in particular, acute pain, and possibly for chronic pain and opioid overdoses. It does sound like treating opioid overdoses in the acute setting with acupuncture has not been studied or even utilized very much. Is that true?

DR. KLIGLER: Well, I have a question from a clinical point of view—not to sound cavalier—but why would you use acupuncture rather than Narcan® for an acute opioid overdose? Personally, I do not see that as a pressing question, because I feel like we do have a biomedical treatment for acute opioid overdose.

I think the big question that needs research is: “What is the role of acupuncture for treatment of opioid-use disorder?” And that is a critical question that has not been researched adequately. This is just my point of view.

DR. CHEN: That is a good point of view.

DR. LANGEVIN: I would definitely agree with that.

DR. HELMS: My special interest is not so much in dealing directly with opioid-use disorder. Rather, I am interested in taking advantage of the availability of acupuncture as a first and follow-up technique to address acute and chronic pain, and thereby cut back, or completely avoid, the use of opioid medications for pain problems.

That is the approach that we have been using at Nellis Air Force Base as we train the family medicine residents, who are usually the first providers to write the opioid prescriptions. We train them to first treat acute and chronic pain with acupuncture.

In one retrospective study, we dropped the number of opioid prescriptions by 45%. In another study, the decrease was 65%, but it was not a balanced study. That, to me, seems to be a more-pragmatic role for acupuncture in dealing with the opioid issue; that is to say, dealing with pain with acupuncture as opposed to trying to use the acupuncture to change the withdrawal and rehabilitation process.

DR. CHEN: Dr. Helms, are those data published. Or, were they from just your internal collection?

DR. HELMS: The one with the 65% is internal. The 45% was published in 2017 in *Medical Acupuncture*. The data

from that study showed reductions in opioid prescriptions delivered, along with stress-related prescriptions, and muscle relaxants. The most dramatic drop was in the opioids.

It is impossible, in that kind of a study, to determine how many pills were actually taken of any of these products. One can only track how many prescriptions were written.

DR. VOLF: I agree with Dr. Helms. We are working with a lot with patients undergoing surgery. Our former students who are anesthesiologists could show that premedication and induction into anesthesia with auricular acupuncture can diminish using drugs by more than 30%. These results seem to put forward that preoperative auricular acupuncture, through vagus nerve stimulation, could help reduce propofol induction dosing for general anesthesia without any clinically important side-effects.

DR. CHEN: I am quite impressed by the numbers you are talking about. Are those published?

DR. VOLF: This work was presented during the Inter-University Congress last year and we hope that it will be published soon. However, in this work, the subjects were respectively allocated into 2 groups: patients treated with auricular acupuncture compared with patients not treated by auricular acupuncture. Sham acupuncture as a control group seems to be difficult to use in anesthesiology.

DR. LANGEVIN: Can you explain why it is not possible to use the sham point?

DR. VOLF: In practice, especially in the field of anesthesiology during surgery, the patient's benefit particularly requires the best efficacy, and we have the obligation to provide the best results for all patients. It seems impossible to deprive any patient of the beneficial effects of real acupuncture.

DR. KLIGLER: Maybe I can contribute a bit here, because there have been quite a few randomized trials—not all sham-controlled—on the use of acupuncture perioperatively. So, these trials were not so much on the use of acupuncture anesthesia during surgery but were on the use of acupuncture before and after surgery. And there has been some very good reviews of them.

Some of the outcomes were very impressive. Some outcomes were less so. Yet, this is definitely an area that has been studied—the perioperative use of acupuncture. It does not mean that we do not need more research. It does not mean that we know the best way to do it. However, there is quite a lot of literature about that already in randomized trials.

DR. CHEN: Great thank you. Moving back to BFA, is it true that BFA might not be good for certain types of acute pain relief, depending on the anatomical area of the pain?

DR. KLIGLER: Well, the truth is that we do not have adequate research yet on BFA to know exactly what kind of pain BFA works best for; how long the duration of the pain relief is; or which populations BFA works best for. It is very widely deployed and has not been studied adequately in rigorous studies, in my opinion.

Luckily, BFA is safe and very highly desired by the population to whom it is being offered; so, I am not in any way criticizing how rapidly and widely it is being deployed. However, if you look at the science, you will see that it is very early and very undeveloped. It is a very important thing to study, but the evidence is not there yet for where it works best.

DR. VOLF: It is useful on the battlefield and, in the ER, as well for all medical doctors when they are in any situation where there is no medical care immediately. So, I think that this protocol should be taught in medical schools for all medical students.

DR. KLIGLER: Well, at least in the VA, for example, if you are talking about a philosophy of care that calls itself evidence-based, you have to make a good-faith effort to determine how well this treatment works in comparison to other treatments.

That is in no way to suggest that we do not continue to spread it while we are doing that, but I think the questions of how well does BFA auricular acupuncture work in comparison to other techniques, in what populations, and in what settings—we cannot put aside the need to research that.

DR. CHEN: This is a very interesting discussion. I am thinking that there are two parallel needs here. One is in the real-life setting, where your main concern is to reduce pain safely. People are going to use BFA, whether or not you understand how it works and whether or not it is placebo. If it works, it works for the individuals.

Then there is the other parallel need, and that is that we need to understand how BFA really works. What does it really do? What is it good for? In what settings? We need a really refined scientific understanding of the treatment or the therapy.

DR. VOLF: I would say we already know how BFA works. Researchers with functional diagnostics for the central nervous system (CNS), such as functional magnetic resonance imaging (fMRI) studies^{1,2} and studies of somatosensory evoked potentials,^{3,4} found the specific connections between the auricular points and the CNS, when the stimulation of the particular auricular point activates the specific somatosensory brain center. So, we know how BFA works, and it is a good basis for teaching.

I think that the teaching is very important, as Dr. Niemtzow teaches military medical doctors. BFA should be taught in medical school in general for all medical doctors, for all medical students.

DR. LANGEVIN: I would actually take exception to the statement that we know exactly how acupuncture works. I do not believe that we really know that much about it, but we have some data. The main problem with the acupuncture literature is that everybody does the acupuncture differently. You cannot take two studies and combine them and draw a conclusion—especially mechanistic studies—because they are all different. Everyone uses different points, different methods, different stimulation methods, and different controls. It is the plague of the acupuncture literature field that nobody has been able to come up with standardized protocols that are used across studies that can be compared and have conclusions drawn from them.

So, I think that is part of the problem—this is a very complex intervention and there are many different ways to do it.

DR. KLIGLER: The fMRI studies are very interesting, although, it is certainly still widely agreed upon that we do not know everything about the mechanisms of acupuncture.

DR. CHEN: I agree. Dr. Langevin, you are in the medical-group setting. Would you say it is because we do not know how it works that is preventing more education and utilization of acupuncture in medical-school education and actual medical practice?

DR. LANGEVIN: Well, I think we are starting to have some really nice and interesting results. I think the neuroimaging field is giving us some interesting data. It is just that the data are difficult to synthesize.

The SAR is making great efforts in that direction, coming up with recommendations about terminology, protocols, and how we can come together as a community of acupuncture researchers to move the field forward to create a body of knowledge that can be built upon.

The question about the effects of using acupuncture in acute-pain settings—both military and civilian—is incredibly important. So, if we want to give a solid research-based foundation to address this question and promote future studies that are going to really enhance our knowledge, then I think we need to very clearly focus on having clarity in the intervention. What is the intervention? Define it. If it cannot be defined, too bad. But I think, with some effort, it could be defined.

DR. CHEN: Yes, and to take a page from the meditation field, one particular form—mindfulness-based stress reduction (MBSR)—has become a really streamlined protocol. There is a MBSR protocol for studying that particular type of meditation.

I wonder if we could do something similar for acupuncture research and agree on a particular protocol of that acupuncture intervention for the sake of studying the science of it and the general efficacy of it for a broader utilization in the civilian setting?

DR. LANGEVIN: Right. And this requires consensus. This is a difficult thing to do. So, people come from different directions. Everybody has their preferred methods. However, if a group like this can come up with a consensus on a good protocol to study and promote that—and not only promote it in a patient-care setting, but also promote it in a research setting—then we would get somewhere.

DR. CHEN: Yes, I agree. What do others think?

DR. HELMS: From research and data-gathering perspectives, such an undertaking is responsible and worthy. I think that one of the biggest challenges we are going to face, however, is finding clinical circumstances where there are enough similarly trained providers to deliver the services and gather the data.

It is a noble idea, and a major undertaking, to have the collaboration to make it happen. For example, at Nellis Air Force Base, we are teaching the majority of the second-year family medicine residents from four Air Force bases. We don't give them formal protocols for the problems that they address in their clinics; rather, the residents come up with treatment options from what they have been taught.

I see the standardization of protocols and delivery as essential to convince the readership that acupuncture has a valid role in pain management. I am asking for people, such as Dr. Kligler, who have been involved in research to come up with ways to approach the inconsistencies and make them consistent.

DR. KLIGLER: Let me just make a quick comment. I think the field is already tackling this fairly actively. For some of the work being done in thinking about what kind of standardized protocols or standardized training, the National Center for Complementary and Integrative Health has already funded a lot of this.

It is not so much a question of if we know how to do research on acupuncture. There are strict guidelines. There are guidelines for defining protocols very clearly. I think it is more about if we, as a whole, are ready for a shift to looking at treatment of acute pain and whether effective treatment of acute pain—whatever the protocol is—leads to less opioid prescribing? That is a very critical question. Nobody has really invested adequately in studying that, as far as I know.

You could compare two different approaches to acute pain. I think Dr. Helms' concept is well-taken. It is very hard to make sure everyone is doing exactly the same thing. However, there are very well-developed and established methodologies for how you document what your treatment is and how you do your best to ensure consistency and fidelity between operators. And we know a lot about that and how to do that.

It is more about that much of the focus has been on chronic pain, which has been incredibly important—and we have made great headway. Acupuncture is now in the

American College of Physicians' guidelines and many other guidelines as one of the evidence-based treatments. I do not think we have focused adequately on acute pain.

It certainly complicated to decide which approaches or methodologies to study. Would you do BFA? Would you do something with electrostimulation? I think the choice is more the question, not: "Do we know how to do acupuncture research?" I think we do.

DR. LANGEVIN: Yes. I think that research, in the end, suffers from heterogeneity. Heterogeneity is really an impairment in drawing conclusions. So, whether you put the effort at the front-end and say, "we are going to try to standardize this," like Dr. Chen was talking about with the MBSR literature, then what you end up 10 years down the line is a solid body of research that can be compared across studies from which you can draw solid conclusions.

If you do not do that and just say, "we are just going to let people practice like they practice," we are going to have this very heterogeneous group of body work. It is easier to do, and it may be more realistic, but, in the end, we will have perhaps less-solid conclusions. So, it is just a choice. I am not saying one is right and the other one is wrong. It is just it is a choice to make. And I think it needs to be made carefully.

DR. CHEN: I would like to go back to Dr. Kligler's question: "Are we ready to use acupuncture to treat acute pain and prescribe fewer opioids?" I think we are ready when the community is ready. So, I am trying to hear from the research community. If there are research ideas and research needs that are compelling, then we gather those ideas, get that feedback, and work within the National Institutes of Health to see how we can make that possible.

DR. KLIGLER: And the answer is "yes, there are people who are ready, that you get us together and we will talk and we will help you make it happen. There is no doubt we are ready for more of this."

DR. VOLF: Exactly.

DR. CHEN: This is extremely helpful. Thank you to all of the experts in this discussion today. This is a highly important topic, particularly looking at acute pain, that warrants more discussion.

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