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BIOGRAPHY AND AREAS OF RESEARCH:

Dr. Veselis received his MD degree from the University of Toronto, anesthesia training at Duke University, North Carolina, and Critical Care Fellowship at University of Virginia, Charlottesville. Dr. Veselis has spent most of his career at MSKCC, developing a research program focused on mechanisms of the amnestic actions of anesthetic drugs, as investigated in healthy human volunteers. Recently Dr. Veselis has focused on more clinical aspects of cognition in the peri-operative period, including delirium, anesthesia related outcomes, pediatric sedation, and neuromonitoring. He is currently

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Michael Wang

TOPIC: Awake paralysis – the heart of AAGA PTSD

BIOGRAPHY AND AREAS OF RESEARCH:

Michael Wang is Emeritus Professor of Clinical Psychology in the College of Medicine, Biological Science and Psychology, University of Leicester UK, and Honorary Consultant Clinical Psychologist in Anesthesia, Critical Care and Pain Management at Leicester Royal Infirmary UK. He is a former Chair of the

Division of Clinical Psychology of the British Psychological

Society. He has worked as a clinical psychologist for more than

35 years, treating patients with PTSD, anxiety disorders, depression, obsessional compulsive disorder, and in particular, psychological problems arising from unplanned anesthetic and surgical incidents.

Anthony Messina, MD, MSPH, MBA is a retired Adjunct Professor of Healthcare Management at the Jindal School of Management, University of Texas at Dallas and anesthesiologist.

Michael Wang (MW): Okay, just for the sake of the record, I'll say there are as many studies demonstrating emotional negative effects of distress with amnesia --intraoperative distress followed by explicit amnesia, as there are the studies to show neurotoxicity (0:05/16:42)

Robert Veselis: Well, I think that is a matter of opinion (0:28/16:42)

MW: (Laughing) Yeah okay (0:29/16:42)

RV: That would be a nice review to undertake (0:31/16:42)

MW: Yeah… okay, right

MW: Is there anything else… (0:37/16:42)

Anthony Messina, M.D. (AM): I have another question (0:38/16:42)

MW: Yeah, yeah

AM: So, I have tremendous respect for your anesthesia perspectives. Although, I don't agree with the end points. So, are you an intravenous…are you are generally a TIVA person [use total intravenous anesthesia technique] ? (0:46/16:42)

RV: No, not necessarily (0:51/16:42)

AM: because when I was in training (0:52/16:42)

RV: Mm-hmm

AM: I was in an inhalational school of Joe Artusio, and the way he taught us was: Intravenous, neurolept, TIVA all had the definitions of anesthesia—the components that you just said. Whereas, inhalational was persistent unconsciousness, optional muscle relaxation, analgesia. And before you know recently, there wasn't the knowledge of… well, let me ask you. So, deep anesthesia in your early stages of your

career, was there as much data about concerns of post-operative cognitive dysfunction and other morbid events? (0:55/16:42)

RV: Well absolutely not. I think this is the whole point in the last couple of decades, is that what we do intraoperatively may in fact have significant effects postoperatively. At that time, like as you just mentioned correctly, we just focused on intraoperative events and once the patient got to the recovery room you just sort of signed off the case. (1:35/16:42)

AM: Right, and that's important. I wanted to bring that out because it's easy to make the two definitions of an adequate anesthetic look controversial. You know, like you said the idea of oblivion no one would argue with you against it unless you had safety issues. Which is what your concern is. (2:00/16:42)

RV: Mm-hmm, mm-hmm.

AM: So, I just wanted to bring that out. (2:21/16:42)

RV: Right, right. And I think another difficulty we have with this whole field; the common field of controversy is we use terms that are not necessarily neutral and that general public people who are not medical have much different interpretations. And that's why when we're doing these studies on the IFT for instance, I much prefer the term responsiveness because we're not exactly sure what that state represents. Once you say consciousness or awake, well obviously that's buying into a whole concept of what awake and consciousness is. And what we're talking about is responsiveness in the presence of anesthetic drugs, and we don't know what you know the implications of that state are. And I think what we need to do is, now that we've identified the IFT as a reproducible phenomenon-- generally in everybody's hands with their recent multicenter study that we need to follow-up to find out what the implications of a positive IFT are, and I think that will inform us a lot more about how to manage the anesthetic. (2:22/16:42)

MW: When you're in the operating room giving an anesthetic yourself, and let's assume that your case doesn't involve neuromuscular blockade, what would you make of movement on the table? What would you make if the patient began to move? (3:46/16:42)

RV: Well I think, again as they say there's no objective measure of how we titrate our medication. (4:06/16:42)

MW: Mm-hmm

RV: I would say that movement intraoperatively is not an unfrequent occurrence. It occurs from time to time. I have no set algorithm for what to do when it occurs. What I do is take into accounts everything that is going on and has led up to that point and I may deepen the anesthetic, I may do nothing, I may give more analgesic. It all depends on sort of the whole framework of what's going on at that time of the context. (4:16/16:42)

MW: Does it indicate lightening…of, the anesthetic state? (4:53/16:42)

RV: Not necessarily, not necessarily. And when you say lightening of anesthetic state, as I've said they're multiple components. So, it could be inadequate analgesia, maybe the surgeon needs to use more local anesthetics. For instance, there may be some extremely painful, but short-lived moments. If I can

predict those ahead of time, if they 're predictable. Then I can give some medication upfront before the stimulus, but if the patient moves at that time I know the stimulus is basically over (4:58/16:42)

MW: Right

RV: And you know, why would I deepen the anesthetic at that point (5:34/16:42)

MW: Okay

RV: So, I just want to point out it's a multifactorial issue (5:39/16:42)

MW: Yeah, understand. You mentioned the isolated forearm technique. As things stand in the United States, it's not possible as I understand it, for an anesthesiologist to use the isolated forearm because the FDA does not approve it. Do you think that the American anesthesiologist, such as yourself, should be putting the case to the FDA for the use of the isolated forearm technique? (5:43/16:42)

RV: Well I must say, I'm a bit uninformed about the FDA regulation. As I understand it, the FDA regulates drugs and devices. The isolated forearm technique is just using devices that we already used and drugs that we already used. So, I'm not sure what the role of the FDA is in terms of regulation regarding isolated forearm technique, but I would welcome studies to support any sort of FDA application that may be required. Because I think that goes along with my previous comment that I think what we need to do is define what the IFT really means, what the implications are and it would be very nice to see some outcome data postoperatively relating to the IFT. (6:10/16:42)

MW: Okay, that's a great response and music to my ears. And some…I've had responses from other American anesthesiologists to the effect that "I can't use the isolated forearm technique, because the FDA won't allow me to." It sounds like that's probably just an excuse… (7:03/16:42)

RV: Um, yes

MW: You're absolutely right. I mean the use of tourniquet or pneumatic tourniquet in theater has been going on for donkey's years, and we know that the orthopedic surgeons are using you know pneumatic blocks all the time and for several hours on end. (7:24/16:42)

RV: Yes.

MW: So, clearly there isn't an issue, a safety issue…so that's interesting. **Final question**: What do you make of the comparison between intraoperative trauma in the presence of amnesic medication, and the comparison with date rape? Do you think that's just plain offensive, or do you think there is something in that comparison to be discussed? (7:42/16:42)

RV: Well, I think um…I'm not actually… I don't regard it as a comparison. What I feel is useful from the date rape publications, is the extreme power of amnestic drugs at low doses. To really…to use your words *obliterate* memory for even very traumatic events. I think people can relate to the degree of emotional trauma with date rape much better than, for instance, undergoing a bronchoscopy. So, that's why I have mentioned that in my previous publications. it's just really illustrative of the power of amnestic drugs that you can in a sense overdose without much downside. (8:13/16:42)

MW: A couple of things about that, it seems to me that…I mean I have you may know that in the past presented in MAA meetings making that comparison, and I've come in for quite a lot of flak for that.

And I think the reason why some anesthesiologists find it offensive, is because they're getting hooked up on the intentions of the perpetrator of date rape comparing that with the intentions of the anesthesiologist—which of course, there is no comparison. (9:10/16:42)

RV: Exactly.

MW: Of course, I understand that.

RV: Exactly.

MW: But the central point is that in both situations, you have an individual who is experiencing trauma, and trauma for which they haven't actually consented (9:43/16:42)

RV: Mm-hmm

MW: That's a really important point you know, consent. Would you approach your patient's and say: "Oh by the way, you probably will be in distress and pain, but afterwards will have no anesthetics…(unclear word), sign here on the dotted line." Probably you wouldn't do that. (9:56/16:42)

RV: Well, actually… (10:11)

MW: And probably none of your patients will agree to it (10:11/16:42)

RV: I think that it certainly depends on how you explain the procedure (10:13/16:42)

MW: Yeah, yeah (10:17/16:42)

RV: I think a good example is awake craniotomy (10:9/16:42)

MW: Yeah, sure (10:22/16:42)

RV: You can present awake craniotomies…(10:23/16:42)

MW: Of course (10:25/16:42)

RV: as a therapeutic procedure, they are or you can discuss them as from a scene of a Hannibal Lecture movie (10:25)

MW: But they aren't invariably distressing to the patient during the procedure. (10:31/16:42)

RV: Right, right because there' s a whole set of patient expectations and understanding, and I think that the tricky point is: how do we talk to our patients about the possibility of a rare event of awareness after the surgery. One thing I don't want to do is frighten the patient, two minutes before they go into the operating theater. Actually, JD gave a sort of a nice script of how we might approach that in terms of dealing with the patients. (10:37/16:42)

MW: Yeah, yeah. Just one other point about the date rape literature. You mentioned the literature and in relation to date rape and not in relation to anesthesia. One of the things the literature in date rape tells us, is that you get break through memory. So, patients who've been date raped…(11:15/16:42)

RV: Mm-hmm (11:34/16:42)

MW: are not simply wandering around in a state of blithe lack of knowledge and awareness. Things suddenly intrude, and I've called this simplicity emotional memory (11:38/16:42)

RV: Mm-hmm, mm-hmm. (11:51/16:42)

MW: and I've argued that we would expect to see the same things happening in relation to general anesthesia in which the patient becomes conscious and distress, but subsequently has explicit amnesia. So, given the fact that that literature suggests that that kind of breakthrough memory and distress, cause it's always distressing-- occurs within date rape. Don't you think that that means there are big questions to ask about amnesia and general anesthesia? (11:52/16:42)

RV: I agree with you, there are big questions to ask. I think as you pointed out earlier, the two situations are completely different. The date rape literatures is certainly an uncontrolled life event, that has many more factors involved, than let's say, the intraoperative anesthetic. (12:28/16:42)

MW: Sure. (12:51/16:42)

RV: and I'm not sure of… the implications of explicit amnesia with emotional trauma, of emotional trauma occurring intraoperatively. I think there's very little literature on that. What I do know for sure, is that if an event occurs it's much better not to remember it, then it is to remember it fully. I think the other issue is how we deal with patient's when these memories come up. (12:47/16:42)

MW: Yeah, I mean we know that a drug like Propofol is extremely good at not only ablating explicit recall but also implicit recall, which is helpful. But we also know that the benzodiazepines are very good at ablating explicit recall, but not implicit recall. And of course, the date rape scenarios are largely at the benzodiazepine category… (13:31/16:42)

RV: Right

MW: and what we're seeing is breakthrough memory that is coming from the implicit memory system, from a psychological perspective. (13:55/16:42)

RV: Mm-hmm (14:02/16:42)

MW: And what I would put to you is that in my own clinical practice and experience, which involves seeing the results of what anesthesiologists do. Is, I do see breakthrough memory, I do see implicit emotional memory, difficulties that have arisen as a result of episodes of consciousness intraoperatively. (14:03/16:42)

RV: Um, well certainly. And I think the literature you are referring to in terms of Propofol, Midazolam are all single drug studies… (14:26/16:42)

MW: Sure, sure (14:34/16:42)

RV: are well controlled. I think the situation intraoperatively is quite different, there are many drugs involved. The implicit assumption, pardon the pun, is that if we ablate explicit memory, we're not ablating implicit memory, but if we give more medication that we'll then ablate the implicit memory, but we don't know that. There's no evidence one way or the other. In fact, we know that during anesthesia sensory perception is intact, sensory perception is intact, that's why they can do neurological testing during surgery. That sensory information gets into the brain, and we certainly wouldn't want to ablate

that with deeper levels on anesthesia. I think, it's a difficult area to study, but I think you should tackle that area. For instance, the implicit memory system may be active all the time, as far as we know. (14:34/16:42)

MW: It is. (15:38/16:42)

RV: and under anesthesia, no matter what depths of anesthesia we're doing. And that maybe other drugs targeting the aversive emotional memory system, for example, beta blockers might be the prescription for that, rather than deepening anesthesia. So, I think it's a complex question, because really no data to guide clinical practice at this point, to really prevent that emotional breakthrough. What I would really hope is to have a person like you available in our practice, and that we follow our patients more closely postoperatively to pick up these problems early and intervene with the patients. We sort of…those patient's sort of drop off the map after you know they... We have some degree of follow-up, but no way of capturing and identifying these patients when they have these problems to intervene early. (15:39/16:42)

MW: Yeah, okay. (16:41/16:42)

Manuscript transcribed by Vanessa Soto; reviewed by MAW & AM; emailed to Dr Veselis on 11/21/17;