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Insight into THE STROKE ISSUE

Presented by Dr. Gerry Clum

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Dr. Alan Weinstein: Hello, everyone, and welcome to another live event brought to you by ChiroSecure. We have a really great show for you today. We're so excited. Remember ChiroSecure's live events educate and support you, the practitioner, by making sure you have the information you need to protect you, your practice and your future. Today we have a great guest, Dr. Gerry Clum. Everyone probably knows who Dr. Gerry is, but today's topic is an update on Cervical Spine Adjusting and Vertebral Artery Issues.

Let me tell you little something about Dr. Clum, if don't already know this. He is a 1973 Palmer graduate. He is a faculty member of the Palmer College of Chiropractic. He is a founding faculty member of Life Chiropractic College, first President of Life Chiropractic College West, Board of Directors or Officer of the Association of Chiropractic Colleges, the CCE, the ICA, the Foundation for Chiropractic Progress, and the World Federation of Chiropractic. He is the immediate Past President of the World Federation of Chiropractic. He was voted Chiropractor of the Year by ICA, Man of the Year by Dynamic Chiropractic, one of the top five leaders of the Chiropractic Profession in Dynamic Chiropractic Readers' Poll. What I'm going to do now is turn this over to the person who is responsible for all these live shows; right from ChiroSecure, Dr. Stu Hoffman. Dr. Stu?

Dr. Stu Hoffman: Hey, thanks, Alan. Glad to bring you another one of our live shows. Today is a special one. Dr. Clum is somebody that helped me decide to become a chiropractor many moons ago and has been a mentor ever since. When it was time to create ChiroSecure as a program to bring into the profession, Dr. Clum was one of the members of our committee that helped to create this program that we now have. Over the last 23 years we've utilized Dr. Clum's expertise as an expert witness, still do. He is one of the leaders in the profession that helps me to learn more and more about certain issues when it comes to risk management and how to protect our doctors.

He is nothing short of genius in our profession, and is one of the few people ever to be respected on all sides of the political spectrum because he has always done what's good for the doctor. He is a good friend. I consider him family, but most important, he is here to protect each and every one of you through education and that's what he's going to do today. I hope you'll welcome him and enjoy the information he is about to present on our behalf. Dr. Clum, all yours.

Dr. Gerry Clum: Thank you, Stu; very, very kind of you. I appreciate it very much, and I appreciate the opportunity to be with you and Alan and our colleagues at ChiroSecure to chat a little bit about things that have gone on in the last
18 to 24 months, maybe a little bit longer, regarding the whole subject of Cervical Spine Adjusting and Vertebral Artery Issues. Let’s get right to it and jump into it. I mean Stu, I can do my part here, and we shall be in business momentarily. There we go.

Dr. Stu Hoffman: Perfect, [let's play 00:03:38].

Dr. Gerry Clum: All right, great. Well, it is January 20th; 2:00 pm has already past, Eastern Time. It’s time to get down to business. Probably the most important thing that’s happened in the past year or so has been the Physician Paper that was released by the American Heart Association and the American Stroke Association. You can imagine that when rumblings were going on that this document was being prepared and that it was going to be published at some point down the road.

There are a lot of nervous people around the profession wondering what our colleagues from the Heart Association and what our colleagues from the Stroke Association were going to say about the concept of cervical artery dissection, particularly as it relates to cervical spine adjustment or in their language, "Cervical spine manipulation."

The good news is I'll cut to the chase and give you the good news, is the paper was remarkably positive for us. Now, there are things in there that I disagree with and I'll point some of those out to you, but for the most part they took a pretty factual approach to things. I would like to take a few minutes and just go through the first page or so and the overview of the paper that was published by the American Heart Association and American Stroke Association earlier this year. This came out in electronic form in the second quarter of the year and came out in print form in this third quarter of the year. Let’s look at the purpose of the discussion.

The Cervical Artery Dissections, CDs are among the most common causes of stroke in young and middle age adults, that’s true. Statistically 10% to 25% of all strokes that occur in that community, in young and middle age people are the product of cervical artery dissection. That’s simply a fact of anatomy and physiology and pathology. The aim of this scientific statement is to review the current state of evidence and the diagnosis of management of a cervical dissection and their statistical association with cervical manipulative therapy. Obviously you know many people in the profession and beyond use the term, "Cervical manipulatable therapy and movement adjustment." I prefer the word "Adjustment" and so on.
They want to look at what's the diagnosis of management [inaudible 00:05:59] and the state of the evidence and diagnosis in management of these dissections as they relate statistically to cervical adjusting. They go on to comment in some forms of cervical manipulative therapy a high or low amplitude thrust is applied to the cervical spine by a healthcare professional. This is the first of the important acknowledgments. It doesn't say Chiropractor. The original or the first iteration of this article said Chiropractor all over the place. It was pointed out to them that there are people that provide manipulative care to the spine that aren't chiropractors and to suggest that this is a chiropractic-specific situation was inappropriate and they took that advice and counsel and made change from chiropractor to healthcare professional.

Let's look at their statement and results. Case control and other articles have suggested an epidemiological association between cervical dissection, particularly vertebral artery dissection and chiropractic cervical manipulative therapy. It is unclear whether this is due to lack of recognition of preexisting cervical dissection in these patients or due to trauma caused by the cervical manipulative therapy.

Let's go back and look at the first sentence. Case control and other articles suggest an epidemiological association between cervical dissection, particularly of the vertebral artery and CMT. That's what Cassidy said in 2008 in his publication in Spine, January 15, 2008, but he also said and the article doesn't say this, there was also the same statistical association ... Excuse me, a similar statistical association found between visits to the primary care medical doctor as was to the chiropractor.

While this statement is correct, that the articles, case control and other articles have suggested an epidemiological association between cervical dissection and CMT, it's also true to say that case control and other articles have suggested an epidemiological association between primary care visits and vertebral artery dissection. We need to understand the broader context. This, we can be critical in this sense what it doesn't say, but what it does say is not incorrect, although it might be incomplete.

We then look at the second sentence again. It's unclear, very important acknowledgment, very important on two levels. First it is unclear. Five years ago, ten years ago, this would have been a slam dunk of course it was the chiropractor, of course is the adjustment. Now the perspective is, it's unclear and that's the first acknowledgment. The second acknowledgment is that it's unclear and is not understood whether it's
existing ... Excuse me, the lack of recognition of a preexisting dissection or due to the CMT.

This is a huge acknowledgment because one of the things that has been talked about in the literature extensively. I have testified too in court on a number of occasions and have counseled chiropractors and have been part of the lectures I have given on those subjects for over a decade is that the current thinking is that the majority of these cases are dissections in progress. They present core care through a chiropractor, through a medical doctor, through a physical therapist, to anybody, and that there are circumstances when the mature [outing 00:09:36] end up where it ends up, regardless of whether they saw the chiropractor, the medical doctor or went for a Starbucks that day.

This is another huge point for us as practitioners. This does acknowledge that the situation that we are looking at maybe a preexisting condition. While I've heard a lot of chiropractors say, "Well, I don't need to worry about this problem because I practice NUCCA," which is extremely low force, or "I don't have to worry about this because I practice activator," or "I don't have to worry about this because I don't use any rotation in my cervical adjustments." If we read this sentence carefully and understand it, it's saying to us, "Be very careful, this isn't about what happens in your office. It's about what walks through the door of your office and the attention needs to be shifted now more toward the recognition of the preexisting dissection in progress rather than the thinking that this is caused in the chiropractor's office."

Now, we can't rule that latter component out. The research is not strong enough one way or the other to say, we can say chiropractor care is not associated in any way with this, but what we can do is accept what this says. This is due to a lack of recognition of preexisting cervical dissection in these patients. There is a significant portion of these patients. They are in the process of dissection when they present for care and they go on to have this equality of the dissection and the stroke regardless of where they had gone that day.

The conclusions of the American Heart Association, American Stroke Association, "Although current biomechanical evidence is insufficient to establish the claim that CMT causes CD, clinical report suggest that mechanical forces play a role in a considerable number of dissections and most population control studies have found an association between CMT and VAD in young patients."
Okay. Let's go back and dissect this sentence, or this group of sentences; [not 00:11:42] commented on that. "Although current biomechanical evidence is insufficient to establish the claim that CMT causes dissection," that is a remarkable acknowledgment. No longer do we have to worry about or some bozo coming into court and saying that cervical spine adjustments caused this problem, period.

Well, according to the Heart Association they can't say that, according to Stroke Association they can't say that. That's based upon the current biomechanical evidence. It's a very powerful and useful statement. It goes on to say, "Clinical reports suggest that mechanical forces play a role in a considerable number of dissections." Absolutely, we know that dissections [inaudible 00:12:26] circumstances, for example, automobile accidents. There was an article in 2005, I believe it was by Beaudry M., Spence, out of Canada and they looked at 80 cases of dissection over a 20-year period and then [inaudible 00:12:44] a practice, and they found that 78 of those cases were about automobile accidents or industrial accidents that rose to the level of automobile accidents with the attending mechanical forces.

Then the statement goes out to say, "Most population control studies they found an association between CMT and VAD in young patients." Well, they have also found an association between CMT and primary care visits. This statement again isn't wrong. It's incomplete, and I would be critical and I'm critical of this statement for that reason. If you understand the broader and fuller context, this is less concerning than if you don't.

My comment on these areas, "The statistical association between cervical dissection and CMT referred to here is found in the Cassidy study," no question about that, "But so is an association between primary care visits and dissection." The association in Rothwell which was the study that led to the two Cassidy study, the Rothwell was the 2002 study I believe, that appeared in the journal Stroke. Rothwell looked at X number of patients, had Y number of dissections within 7 days, 14 days of visiting a [chiropractor 00:14:07] and did not look at in the context of within 7 and 14 days of visiting a medical doctor, within 7 or 14 days of visiting an emergency room, within 7 or 14 days of having sex, within 7 or 14 days of having a cup of coffee. It was just out there.

The Cassidy study took that Rothwell study one level further. They said, "Okay, we'll accept that you found a statistical association, but is there a similar, greater or lesser association with persons who visit medical
doctors within a week of these events occurring?" In fact, Cassidy found in 2008 or published in 2008 that there was in virtually every parameter a greater incidence of dissection among patients who saw their primary care medical doctors within a week of the dissection rather than saying or ... as compared to those who say a chiropractor. This means that in those cases it wasn't what was going on the chiropractor's office that was contributing to the problem, it's again is what walks through the door. Huge consideration we need to be aware of and we need to understand completely. Let's look at these things again and review.

What do we take from this joint position statement, "Insufficient evidence to establish the claim that CMT causes CD," big statement. "It is unclear whether this, in epidemiological association is due to a lack of recognition of a preexisting dissection in these patients or due to trauma caused by CMT." Again, we talked about the idea that the association between primary medical care is there as well countering some of that claim that was in those first few slides.

Based upon the American Heart Association and American Stroke Association statements and other literature, what can we say or what shouldn't we say? Let's talk about what we shouldn't say first. The literature has shown no association between chiropractor cervical adjustments and CD. We can't say that. The literature has shown a statistical association between cervical spine adjustments and cervical dissection, it's a fact. It's also that same statistical relationship or stronger, between in fact this phenomenon and primary care medical visits.

The American Heart Association/American Stroke Association has said chiropractic adjustments don't cause cervical dissection or can't cause cervical dissection. They didn't say that at all. They simply said there is insufficient evidence to support a cause statement. The third thing we can't say is, "Chiropractic adjustments don't cause cervical dissection and/or stroke." They may well not, but based upon this literature and what we have to work with, we cannot definitively say that. We need to understand those and use those terms and use this information completely and make sure what we say about our interpretation is solid.

Let's just leave the American Heart Association Stroke Association behind and let's look at an article from 2011 from Wouter Schievink, who is at Cedars Sinai hospital in Los Angeles. Schievink is probably one of the most prolific writers in medicine. He is a neurosurgeon, works predominantly in Cerebrospinal Fluid Leaks and things of that nature but
does do a lot of vertebral artery and carotid artery work. In a paper, he published in 2011, an editorial piece, he said, "It is not the intimal layer, which is what we've been taught all long, but rather the media and adventitia that are primarily affected in cervical artery dissection. These findings confirm the existence of an underlying systemic arteriopathy in patients with spontaneous cervical artery dissection and they suggest that the outer layers are primarily involved in the causation of the intramural hematoma."

Now, let's again take this one apart, look at it again. "It's not the intimal but rather the media and adventitia," and so we were taught all long and I may have taught many of you that the attention we needed to pay was to the tunica intima and certainly it is important. What Schievink is saying is that in the cases of spontaneous cervical artery dissection, now other parties looking at patients who have this problem after our chiro want to say, "Well, that wasn't spontaneous, that was mechanical forces in these adjustments."

What they are talking about here is that there is an underlying arteriopathy in patients with spontaneous cervical artery dissection. We know that patients with Marfan's disease, patients with Ehlers-Danlos syndrome, patients with autosomal dominant polycystic kidney disease, patients with Fibromuscular Hyperplasia, patients with extreme prolonged hypothyroidism, they all have a greater tendency than the average population to dissect. We then go on and also look at the genital variance, whether it's a lighting factor 5 or some other type of congenital variant in the collagen that causes that patient to be at risk for cervical artery dissection.

This again is another important statement that again it isn't necessarily the forces that are involved, it's the underlying strength of the tissue involved, and it's a pathology in the tissue potentially in many of these cases; an important acknowledgment from a very leading person in this world.

The next paper I would like to look at is from Walter Herzog, University of Alberta at Calgary, the guy has done wonderful work in the profession for years and years and years. Here in 2012, Herzog looked at vertebral artery strains during low amplitude cervical ... High velocity low amplitude cervical spine manipulation or cervical spine adjustments. The conclusion that Herzog and his colleagues came to is that, "Vertebral artery strains obtained during spinal manipulative therapy are
significantly smaller than those during diagnostic in range of motion testing."

Let’s think about that for a second. What they are saying is that, "In the process of giving an adjustment, we induce less force on that artery than is induced during a normal cervical range of motion study, and the strains are much smaller than the failure strains that are involved, who cause the artery to fail mechanically." Herzog and company conclude from this work that, "Cervical spinal manipulative therapy performed by trained clinicians does not appear to place undue strain on the vertebral artery and thus does not seem to be a factor in vertebral base or artery injuries." There is an important few statements in there that we need to look at.

This is first of all, excuse me, my screen is just ... There we go. First consideration we need to look at is that this is assuming healthy vertebral arteries. Number two, this was a laboratory study. It was not in live patients, but it was in vertebral arteries that were dissected out and removed from cadavers, the strains were tested out. There will be some criticism regarding that, that this wasn't a real world, real time, real life situation. Those same types of strain testings for all sorts of tissues, whether those tissues are arterial tissues, whether those tissues are ligamentous tissues or muscular tissues have been used throughout the history of healthcare to establish very important milestones in different disciplines.

It's important for us to keep in mind. You may say, "Well, how could the strains be greater with a range of motion than with an adjustor?" It has to do ... Work equals force times time. The force involved in the cervical adjustment might be ... is very low, but the time is extremely low. In the consideration of the milliseconds that are involved in an adjusted thrust is generally in the range of 20 to 25 milliseconds, thousands of a second that the force is induced into the artery, in comparison to a person who has been asked to go through a range of motion study, rotate the head to the right or to the left and hold it.

The time involved, the force times the time creates far greater strain over time then the milliseconds of the adjustment. It's important for us to keep that in mind. There has also been some literature over the years that has talked about patients' experience in dissections during the process of a range of motion examination. It's not an unheard of concept.
Another article I would like to get through quickly is a very important one is a very exciting one from last year, and this has to do with, "Changes in vertebral artery blood flow following various head positions and cervical spine manipulations." One of criticisms over the years has been that we may not damage the artery with the adjustment, but we cause an abnormal blood flow, abnormal pattern of blood flow and if you are familiar with Bernoulli Principle, that we create an alteration in the blood flow that creates turbulence and greater pressure after the fact and that damages the artery or can damage the intimal and set up a thrombogenic environment.

Well, if we look at this paper [backwards 00:24:28] now, this is from a group of CMCC and involve people like [Jay Triano 00:24:33] and people that have been in this area of inquiry for a longtime, they essentially took a series of real-time MRI studies that assessed blood flow before, during, and after an adjustment and before, during and after range of motions. Their conclusions or findings, "The side to side differences between ipsilateral and contralateral vertebral artery velocities was not significant for either velocities or flows throughout the conditions."

In the pre adjustment, adjustment, post adjustment range of motion environment, there was not a significant change in the flows or the velocities before during or after. The conclusion, "There were no significant changes in blood flow or velocity in the vertebral arteries of healthy male adults after various head positions or cervical spine manipulation."

What's the most accretive and most critical word in that? "Healthy." The subjects that were involved in this were in their 20's. They were all healthy and so on. We have to be careful about how far we can extrapolate this information, but this is very important fundamental physiological activity that we haven't had a good handle on up until just recently with this work. Let's look at the one of the conclusions statements.

It says, "Furthermore, only two trials have examined the effect of cervical manipulate therapy on human vertebral artery blood flow. Licht et al examined peak velocity in the vertebral artery after CSM on 20 students with biomechanical cervical spine dysfunction in a randomized controlled trial using Doppler ultrasound. Similar to the MRI data reported here, there were no significant changes of peak velocity between the CSM group and that on a controlled sample. In another randomized controlled trial, color-coded duplex sonography, Licht and colleagues found no
change in vertebral artery blood flow with change in head position CMC or after CMT and blood flow."

When we think about this, this is again another important area, Herzog says, "We don't strain the artery enough to be able to damage it." Schievink says that "It's really not the intima that you need to be worried about. You need to think more about the media and externa." Now, [Triano 00:27:08] and company tell us, "In the process of adjustment, we don't cause a change in Bernoulli Principle or doing both Bernoulli Principle that we don't disrupt the blood flow, if the velocity stay the same and the flow pattern stay the same before, during, and after an adjustment in the vertebral artery in particular."

Getting close to my time now that I can hear my host getting nervous on the other end, I'll take into one area ... Emerging area of interest. This may sound like a stretch for some of you, but there is a developing body of may be ten or twelve case studies on the subject and its worth being aware of because there is a simple way to ward this problem. The question is, "Is there a relationship between cervical spinal adjusting or thoracic spinal adjustment for that matter and cervical fluid leaks?" The cervical fluid leaks would yield a spontaneous intracranial hypotension, the type of headache that a patient has, for example, after they've had a spinal tap.

This whole headache process or this spinal intracranial hypotension was first described in 1938 in Germany. The imaging that we have today gives us a chance to measure these fluids in real-time, see the changes much better. We know this phenomenon now occurs at a rate of about 1 per 50,000 patients. This is twice as common as cervical spine ... Excuse me, as vertebral artery dissection in the population. It was later described in couple of years later, as being 1 in 20,000 which would make it five times more common. The average age is in 38-42, female 3:2 versus males and it ranges from children to persons of old age.

The key thing I can give you right away to take away from this whole process, "When a patient presents with a positional headache that is when they're laying down the headache goes away. They stand up they get the headache back. That is the classic sign of a dural tear and a cervical spinal fluid leak." When that patient presents to your office, my advice in counsel is refer them for a neurosurgical consideration and a neurosurgical evaluation.
Now, most commonly this phenomenon develops secondary to lumbar puncture, myelography, spinal anesthesia, cranio spinal surgeries etcetera. In other mechanical events, it's simple as a valsalva maneuver, coughing and sneezing have been on the record as inducing it. The first reference to this relative to chiropractic care came in 1997 with a proceeding by Mokri out of Mayo. He didn't assert a causal relationship. He just simply said that one of the patients in his study had a previous finding on having visited a chiropractor.

Relative to diagnosis, if the patient has a history of an invasive procedure, say, lumbar puncture for example, if the headache is relieved by lying down, you want to get an MRI of the brain. They're going to be looking for changes in the meninges and the thickening of the pachymeninges, the presence of subdural fluids, subdural hematomas and a downward displacement of the cerebellar tonsils.

In its most extreme form this produces rupture and herniation of the brain stem and can be fatal in that environment. That'll lead us to an extremely rare situation. It does exist. It can also be misdiagnosed as a Chiari malformation number 1. CT myelography, it's helpful to find the site, radionuclide cisternography hence we're not going to be involved in, just for your background, will again help us site the location and lower cervical spinal fluid pressure is potentially diagnosed.

What's the takeaway today? The Heart Association folks had given ourselves stuffs to work with. The other researches along the way have helped us along. There's one area we want to keep in mind in, when a patient presents with a positional headache, they lay down its better, they stand up its worse, be cautious. Hear these words in the back of your head. Send them out for a referral for a neurosurgical consult and go from them. Dr. Hoffman, Dr. Weinstein, thank you so much for the opportunity. I hope this helpful to you and to your colleagues. Thank you, gentlemen.

Dr. Stu Hoffman: Thanks, Dr. Clum. I know that the people that are participating on this even will get lots of great information to utilize going forward. The reality is that most of our colleagues will never encounter a situation involving a stroke, which makes it hard to make real to people. At the same time, there are a certain percentage of our doctors that will encounter a patient that winds up with stroke and/or stroke claim.

The simple fact is that we get to deal with it as much as the information that was presented today is terrific and helps us feel good about what we
do from a scientific point of view. The public perception just going on Google and looking at chiropractic and stroke, it’s all over the place. We’ve talked about it before. We’ll talk about it again. Having this kind of information and having somebody with a credibility that Dr. Clum has with the knowledge that he has that brings to the table is something that we want you to know you can feel secure, no fun intended, maybe it is intended.

You can feel secure in what you’re doing having someone like that on your side. That’s what we’re all about. That’s what we want to continue to do. I’m working with Dr. Clum on other projects to make us even more bullet proof as a profession by utilizing research and facts and information that most other people quite frankly just don't have. I want to thank him. It’s always an honor to work with him and have him at our side. I just want you all to know how fortunate you’re to have him be able to be available to us and therefore to you too. Thank you. Alan, I wanted to just bring it back to you to do some housekeeping. Away we go.

Dr. Alan Weinstein: Okay, well, just truly amazing stuff that Dr. Clum. That was outrageous. I want to tell everyone that Dr. Clum actually to be on the show is sitting in an airport, doing this live event n an airport. He and I … We’re on a hangout last night preparing 8.30-9:00 night. I think he was in his hotel room. He literally stepped up to the plate; nothing stopped him from being here for ChiroSecure and Dr. Stu. As I said he is in the airport even right now.

You're seeing on the screen right now, the ChiroSecure page that you watch this on, everyone is on this make sure if you have not done so already complete the form on the right side of the page so that you will get a copy of Dr. Clum’s slides and the transcript of actually the live show. Sign up for that. Again, if you go up a little further on the page what you’re going to see is you could sign up for our concierge service right here on the right.

That will make sure that you get all the information's, notes, transcripts of all our future presenters. We’ve just added Pat Gentempo, Bill Esteb, and Ted Curran to the line-up people that are going to be coming on the ChiroSecure shows. Dr. Stu is preparing a show that to me as a practitioner that’s practiced for 30 years is critically important. That is what is really the difference between a occurrence and claims may as far as I'm concerned that's one of the most misunderstood things in malpractice.
You need to know that. Make sure that you sign up for the concierge service or just sign up for the Dr. Clum's information, either one. If you've not done so already, make sure that you scroll up, click on the quick quotes links. Fill out the quick quotes. You're going to be very pleasantly surprised about the rates of ChiroSecure, if you're not already a ChiroSecure client. On behalf of myself, Dr. Alan Weinstein, Dr. Stu Hoffman, ChiroSecure and a great presentation by Dr. Gerry Clum. We look forward to seeing you in another 30 days with another great ChiroSecure live event. Have a great day everybody.
ChiroSecure
“Live Events”

Tuesday January 20, 2015
2:00p EST
“Purpose—Cervical artery dissections (CDs) are among the most common causes of stroke in young and middle-aged adults. The aim of this scientific statement is to review the current state of evidence on the diagnosis and management of CDs and their statistical association with cervical manipulative therapy (CMT). In some forms of CMT, a high or low amplitude thrust is applied to the cervical spine by a healthcare professional.”
Results: “Case-control and other articles have suggested an epidemiologic association between CD, particularly vertebral artery dissection, and CMT. It is unclear whether this is due to lack of recognition of preexisting CD in these patients or due to trauma caused by CMT.”
Conclusion: “Although current biomechanical evidence is insufficient to establish the claim that CMT causes CD, clinical reports suggest that mechanical forces play a role in a considerable number of CDs and most population controlled studies have found an association between CMT and VAD stroke in young patients.”
GWC Comment: The “statistical association between CD and CMT” referred to here is found in the Cassidy study. But, so is an association between primary care visits and CD. The association in Rothwell was in a vacuum and the vacuum nature of their analysis was removed by Cassidy et al. who found less association with CMT than with primary care medicine visits.
Based on the joint AHA/ASA position paper what can be said:

- “There is insufficient evidence to establish the claim that CMT causes CD”
- “It is unclear whether this [an epidemiological association] is due to lack of recognition of preexisting CD in these patients or due to trauma caused by CMT”
- There is an epidemiological association between patient visits for chiropractic as well as for primary medical care with the association being stronger for the primary medical care visits [Cassidy; SPINE, 1/15/08]
Based on the literature what we **should not** say relative to this subject:

- The literature has shown there is no association between chiropractic cervical adjustments and CD
- The AHA and ASA has said chiropractic cervical adjustments don’t/can’t cause CD
- Chiropractic adjustments don’t/can’t cause CD and/or stroke
Recent Literature of Interest
re: Cervical Spine Adjusting and Cervical Artery Issues

- Etiology of Cervical Artery Dissection: The writing is in the wall, Schievink, Neurology 2011;76;1452

- “…it is not the intimal layer but rather the media and adventitia that are primarily affected in cervical artery dissection…(these findings) confirm the existence of an underlying systemic arteriopathy in patients with spontaneous cervical artery dissection and they suggest that the outer layers are primarily involved in the causation of the intramural hematoma…”
Recent Literature of Interest
re: Cervical Spine Adjusting and Cervical Artery Issues


- “Vertebral artery strains obtained during SMT are significantly smaller than those obtained during diagnostic and range-of-motion testing, and are much smaller than failure strains. We conclude from this work that cervical SMT performed by trained clinicians does not appear to place undue strain on the VA, and thus does not seem to be a factor in vertebrobasilar artery injuries.”
Recent Literature of Interest
re: Cervical Spine Adjusting and Cervical Artery Issues

- Changes in vertebral artery blood flow following various head positions and cervical spine manipulations, JMPT 37(1) 22-31 Quesnele et al. (2014)
Recent Literature of Interest
re: Cervical Spine Adjusting and Cervical Artery Issues

- Findings: “The side to side differences between ipsilateral and contralateral Vertebral artery velocities was not significant for either velocities or flows throughout the conditions.”

- Conclusion: “There were no significant changes in blood flow or velocity in the Vertebral arteries of healthy male adults after various head positions or cervical spine manipulation.”
Furthermore, only 2 trials have examined the effects of CSM on human VA blood flow. \(^{18,28}\) Licht et al. \(^{18}\) examined peak velocity in the VA after CSM on 20 students with biomechanical cervical spine dysfunction in a randomized controlled trial using Doppler ultrasound. Similar to the MRI data reported here, there was no significant change in peak velocity between the CSM group and a control sample. In another randomized controlled trial color-coded duplex sonography, Licht and colleagues \(^{28}\) found no change in VA blood flow with change in head position or after CSM on blood flow.
Emerging Areas of Interest

- Spinal Adjusting and cerebrospinal fluid leaks
  - Spontaneous intracranial hypotension (SIH) was first described in 1938 by Schaltenbrand
  - Advances in high quality imaging have increased the frequency at which this condition is recognized
    - 1995 Olmstead County, WI 1/50,000. In 1997 1/20,000. F:M 3:2
    - Average age 38-42. From children to aged
Emerging Areas of Interest

- Spinal Adjusting and cerebrospinal fluid leaks
  - Presentation: positional headache caused by CSF leak from a dural tear
  - Most common origins: Mechanical disruptions from lumbar puncture, myelography, spinal anesthesia, cranio-spinal surgery
  - Other mechanical events associated: Valsalva maneuver, coughing, sneezing etc
  - First published observation re: spinal adjusting by Mokri, 1997 Mayo Clin Proceedings. No causal relationship asserted, observation that one patient in study had seen a chiropractor
Emerging Areas of Interest

- Diagnosis is based upon:
  - History of invasive procedure (LP for example)
  - Positional headache relieved by laying down
  - MRI of the brain with contrast
    - Diffuse thickening of the pachymeninges with contrast enhancement
    - Subdural fluid collections
    - Subdural hematomas
    - Downward displacement of the cerebellar tonsils
    - Often misdiagnosed as a Chiari I malformation
  - CT myelography for specific leak site location
  - Radionuclide cisternography gives broader view but less specific on site location
  - Low CSF pressure on LP (<60mm of H20) [Norm: 65-195 mm]
Thank you very much for your interest, time and attention

- For more information on these subjects
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