THE AFIB REPORT
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VIRTUAL LAF CONFERENCE

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SUBJECT: LAF & the Enteric Nervous System

Fellow Afibbers,

Many on this website, including Mike F, Marshal and myself, have been screaming, “this afib thing is coming from our stomachs and esophagus” until where blue in the face.

I posted 2 days ago about an experimental procedure called electrogastrography where the electrical activity of the stomach is recorded using equipment similar to an ECG. Fran replied that this sounds like the providence of the Enteric Nervous System and suggested a website. This website is simply written and designed for high school kids.

This is an extract:

“Two brains are better than one, especially if you're hungry. Ever had diarrhea when you felt frightened? Had a stomach cramp before an important exam? Seen a snake barf a beetle meal when surprised? If you've answered 'yes' to any question in this little quiz, you've already noticed the handiwork of an obscure piece of neurological networking called the enteric nervous system.

Scientists who study the network of nerves surrounding the esophagus, stomach and intestines compare it to a microcomputer, and call the better-known brain-in-the-head a "mainframe." But while microcomputers represent the future of silicon processing, this biological micro-in-the-belly is a relic of the distant past, of a time when the most important thing in life was eating.

Millions of years before the dinosaurs, when animals first were evolving, thinking about tomorrow was distinctly less important than finding good grub today. These primitive animals had another concern -- trying not to wind up inside something with sharper teeth. Both factors explain why the first nerves to develop were in the digestive tract.

When animals began doing more than just eating (say choosing a good wine to complement dinner), they evolved that better-known brain in the skull. But instead of replacing the downstairs brain, the upstairs brain was hooked up to it. And it turns out that both brains originate from a structure called the neural crest, which appears and divides during fetal development to form both thinking machines.

The enteric nervous system, present in all vertebrates has these functions: to regulate the normal (digestive) activity of the digestive system and prepare it for whatever its future may hold: whether it be sampling lobster thermidor or dodging a headlong charge from the king of the tigers.

With a population of 100 million nerves, the enteric nervous system is as complex as the better studied spinal cord. And like the spinal cord, it transmits and processes messages and while this nervous system isn't protected by a skull, many of its structures and chemicals parallel those of the mainframe brain. It has sensory and motor neurons,

information processing circuits, and the glial cells. It uses the major neurotransmitters: dopamine, serotonin, acetylcholine, nitric oxide and norepinephrine. It even has benzodiazepines, chemicals of the family of psychoactive drugs that includes Valium and Xanax.

Please explain. Sorry. Can't. Nobody knows. But it's an indication of the complexity of the gut-brain, and of the number of questions remaining to be answered about it."

I had never heard much about the enteric nervous system before and find the above explanation to be totally bizarre!!!!!

The website link is:

http://faculty.washington.edu/chudler/auto.html

This website also explains the role of the sympathetic and parasympathetic nervous systems in simple terms for those finding the concept hard to grasp.

For the more technical minded Fran suggested this enteric website:

http://www.hosppract.com/issues/1999/07/gershon.htm

It would be very interesting to see the Enteric Nervous System and its implications for LAF discussed in the Conference Room.

Cheers,
Dean

As a mixed a-fibber, I believe that the enteric nervous system may very well play a part in the initiation of fibrillation. There are times when taking a drink of cold liquid will send me into fib. I also have a long standing relationship with GERD and suspect that it too plays to the awakening of the LAF devil.

However, I also believe that my adrenergic episodes have little or nothing to do with such matters. Or could it be that the stimulation from adrenaline is impacting this system?

Whatever the relationship, in my case, I am sure that the problem is genetic in nature because I have several relatives that suffer from A-fib.

Jim Rose

Yesterday I had really good evidence of the gut heart link.....[this used to happen every single day when my thyroid was overactive many years ago, but I suspect this time it was an unsuitable food item!]..... heart beat starts being noticeable and a bit faster than usual, then within 15 minutes I realise I need the bathroom.
I don't doubt the influence of food and GERD on a-fib.

Joyce

Further to my post, I would like to explain my reasons for bringing up the topic of the Enteric Nervous System.

My LAF journey has been typical of the vast majority on this board. Shunted around from doctor to doctor, cardio to cardio, hospital to hospital. Not knowing really anything that was going on with my heart but just taking the doctors word that they could cure me. For me the breakthrough came when I was sent to a gastro. I had many different tests with the result that I was diagnosed with a loose LES and GERD. This for me is my afib trigger. I was put on Losec and take extra Mg daily. I also cut out all obvious sugar sources like soft drinks, chocolate, cakes etc. I have now gone 16

months without an afib attack but I still get enough pac's etc to still worry me.

The question I would like to know is why does the decrease in the strength of my stomach acid have such a profound effect on afib? My stomach acid would now have to be on the low side with the Losec and Mg. Not really good for my health in the long term.

I have been doing a bit of digging around with regard to stomach acid and have come across some interesting theories. The stomach and the rest of the digestive tract produces an electric current of its own. It is only recently that gastros have been testing the strength of this electrical current. They use terms like "abnormalities in gastric myoelectrical activity such as bradygastria, tachygastria, or mixed or non specific dysrythmias." They even talk about stomach fibrillation…. AF of the stomach!! It all sounds familiar dosen't it?

This stomach current also increases markedly when digesting food. When the stomach acid increases so does the electrical current (and would also bring on my afib attacks!!). One would have to assume that with LAF being basically an electrical problem then an alternating electrical current in the stomach and digestive system would surely need further investigation. I have also noted the success of Mg in reducing the incidence of afib in myself and many on this board. Mg reduces stomach acid strength so does this in turn reduce the electrical current in the stomach? Is this where Mg is doing its best work? ……in the stomach rather than at the cellular level?

Do afibbers have an elevated electrical level of the stomach and digestive tract?

Jackie has often said that everything happens at the cellular level but what about the electrical level?

As usual lots of questions and no answers.

As far as the Enteric NS goes are we now increasing its influence over the body due to our love and excess of food? All the different foods and chemicals we now consume must be reactivating this Enteric Nervous System. (ie. Increased electrical output). Are we now turning evolution around full circle with our eating for pleasure?

I'm only a lay person here with a lot of crack pot theories (and having a lot of fun in the process!) so I am keen to hear the opinion of health professionals on this topic.

Dean

Here is my crackpot theory.

i think the first symptom of a food allergy when the food hits the stomach could probably relate to GERD.

Please read below link which is based on eat right for your type

http://www.totalpotential.com/members/blood.pdf

it talks about blood groups what can be compatible with each blood type it makes good reading and i am trying to follow it. i'm blood type A and the foods it would consider poison to my system actually do cause a reaction bloating excess acid and mild abdominal pain within an hour of eating, beef tomatoes and red and yellow peppers are a problem which i never realised before i'm still working on it, bread and diary are also a problem people most intolerant to wheat and diary are blood group O which is the oldest blood group dating back 40,000 years ago.

Anyway its worth a read as one of the noted symptoms of a food allergy can be cardiac arrhythmias probably due to lack of nutrients over a long period of time

tonigirl 30 alafer

A couple of weeks back i had an afib attack which lasted the night but most of the time i managed to sleep.

Talking to others on here on main postings i mentioned that i was just starting to try and diet. Was only eating fruit and drinking plenty of water and just a light evening meal. This was just for 2 days then i had the fibrillation so i stopped. I do normally eat properly and healthy.

Of course that would affect my electrical system ..... digestive system was better but the heart wasn't. Since then i have tried milk of magnesia and that helped and yes I've been careful losing weight gradually.

So i do agree is that food we eat does have something to do with pressure pressed against our sternum which puts pressure on the main arteries.

Babs

Hi Dean ,

Here is my bit of mumbo jumbo!

I have read somewhere that Mg with K couple together to "make" one side of the electrical energy, ie negative or positive and Ca and Na couple together to oppose. This giving the pulses to "operate" the heart. Would this also do the same in the digestion system?

If so you may be right in your thinking on electrical influences with an irregular or mismatched diet in so much as, to much Na, Ca, or the other side of the circuit not enough Mg. or K? This influencing not only the heart but also the digestive system?

I notice with both my hair analysis that my Ca/K and Ca/P are in the "high" range but my K and P on there own are acceptable. So does that mean that my Ca intake is high upsetting my Ca/Na side of my electrical pathway making my pulses "one sided"?

Chicken or the egg? Come on Richard, get back to work! I to am very much a lay person, as you can read!

David S vlaf, 66 yy.

David, very funny:-)) I am back from vacation, and had a wonderful time, but have been playing catch-up since my return; here, at home and at work.

I have a few thoughts about why there could be a link between AF and the stomach. Acetylcholine begins to be released as soon as food enters the mouth, and there is a possibility that this transmitter is either in short supply, diverting what is needed from the heart, or that it's circulating in the blood stream and causing an excitory response to the SA node. See the following link, but you'll have to click on the links to get a full understanding:
http://www.vivo.colostate.edu/hbooks/pathphys/digestion/basics/gi_nervous.html

Another thing I have wondered about is the cross reaction of acetylcholine and MSG in the stomach, both of which are excitory. This is purely wondering on my part, as I've not read anything about this.

On the other hand, the one thing that stands out mostly in my case is chloride. This is the only electrolyte that has gone below and above reference range in my testings, with the latter probably going over due to the drip bag. My Cl levels were below range, when first admitted to the hospital. Everything else, even though they have dipped or risen, have remained within range. My intracellular levels of Mg were above range, and K was normal. Chloride is necessary for transport of Na and K, but what if one needs more chloride to digest meals that are not easily digested, and the stomach keeps demanding more. Where does the additional chloride that is needed for heavy or demanding meals coming from? What if one drinks a carbonated beverage with their meal? They're then neutralizing the necessary acid further, which then signals the stomach to produce more HCl, to compensate. I can only imagine that the stomach

needs a lot of HCl to break down glutinous substances such as bread or dairy. If memory serves me correct, Hans's Cl levels dropped when his Aldosterone levels increased, but I'm not sure on this. While I was on vacation, my brother-in-law told me that he can occasionally drink pop, but if he drinks it for several days in a row, he begins to get serious indigestion, and as soon as he stops, the indigestion does too. My thinking on this was that his demands for Cl increase, beyond what his body or diet is supplying, after continuously suppressing his acid with carbonation.

I truly feel, in my case, that my lack of HCl and taking acid suppressors, ultimately led to the malabsorption problems, which then led to the lack of necessary nutrients to keep my system running properly. That then led to my sensitivities of substances, such as MSG, and muscle breakdown possibly causing the diaphragm to not be strong enough to keep my stomach down.

So, that's my 2 cents worth.

Richard

Welcome back Richard, You were missed!

What I have been wondering about is drinking water with meals, I always take my supplement with meals outside of the few that says "take on an empty stomach" I think it was Dr. Batmanghelidj that said to drink a glass of water 1 hour before meals and not with your meals so that the water would not dilute the acid needed for digestion. My daughter has borrowed my book so I can't look it up.

Ella

Thank you Ella, for missing me. That is a good thought about the dilution of acid with water at meals. I have to drink water with my meals because I have the reoccurring problem with my Schatzky's Ring, which sometimes causes food to get stuck. It came back when I stopped Prevacid last year, and before I started the Paleo diet. I may have to have it fixed one more time. I've been putting it off in hopes that it would heal itself with my new dietary ways. It is better, but it's still there. I do take extra HCl with every protein meal, however, so maybe that helps.

Richard

Dean,

This really rang a bell with me!

I have mentioned many times on this board - and to countless doctors whose eyes glaze over - that minutes before I go into afib, I have definite spasms - not unlike the pronounced beats of afib - along with an irritated nerve sensation below my sternum (stomach) . I must have been experiencing what researchers are now reporting!

Carol A.

That is exactly how my afib episodes start, They say we have a second brain in the digestive system, I feel more like I have a second heart just below my sternum, I seem to get those crazy beats in my stomach several times a day now but the fib never comes on till about 10pm, when it jumps up in the chest.

Ella

Ella,

Your description fits mine exactly!

It's good to know it isn't "all in my head," but rather in my stomach...

Carol A.

I have just read this topic with great interest. I'm not sure what all the abbreviations are though.

I have afib not well controlled by pacemaker + flecainide or now arythmol, both producing debillitating side effects.

I have long felt there to be an underlying cause and intend going for allergy testing soon.

The location you describe at the start of attacks is the solar plexus area, a huge bundle of nerves, therefore a great source of electrical activity and affect the stomach. I also feel the area is implicated in my own case.

As a reflexologist, I have tried stimulating the solar plexus and stomach reflexes when having an attack and have found some success with this. You can do this yourself by massaging the middle of your left palm and toward the medial edge, and thumb walking the area, its worth a try.

Janet

Janet

Thank you, I will try that next time "the monster" comes for a visit should be any time now as my last episode was 12 days ago.

Ella

Dean: I know you must be disappointed with lack of response to the Enteric Nervous System as a cause for AF. I knew nothing about this 3rd part of the ANS, so it was interesting to me although a bit confusing.

But I'm still skeptical that there are origins of AF in the esophagus or stomach, probably because I've never had a (known) problem in that area. But it also occurs to me that the esoph/stomach and heart have the sympathetic and parasympathetic nervous systems in common, and an imbalance in these could result in both heart and stomach problems. The heart cells are unique in their electrical structure, so ectopics that cause AF would probably belong to the heart alone. But the unbalanced nervous systems could bring about problems in both areas and so the linkage to a common origin makes more sense to me.

Learning more about the ANS and it's role in GERD seems worthwhile and certainly could bring insights into what starts AF. I just believe they could have a common cause rather than one be the cause of the other. But what can you expect from an AFibber w/o stomach disorder!

Thanks for pointing out the ANS; a very interesting turn.

Anton

Hi Anton,

When Hans put the Enteric Nervous System in the Conference Room I later thought about it and realised that there are really only a handful of people on this website who have the technical knowledge and understanding to discuss this subject. They are Hans, PC, Jackie, Richard and Fran.....there are probably others I have missed so don't be

offended!!!.

So it was a bit of a dead duck before it even started. Oh well, a least some of us lay people have gained a little bit more knowledge and as Jackie says:
Knowledge is power.....I mean, the way we are all going, we must be qualified junior doctors by now.....I WANT A WAGE RISE!!!!!!!!

Cheers (and not at all disappointed)
Dean

I am new to this forum or page...However, I am eight weeks after having a paraesophageal hernia repair ("half of your stomach is above your diaphragm", said the doctor)....And, I have suffered with paroxysmal a-fib for several years....I, too, have BEEN saying, I know there is a connection somehow with my eating...Well, I am still on Norpace, but have only had two bouts of a-fib since coming home from the hospital....I used to have about one full day of a-fib once a week or at most once every two weeks which totally incapacitated me (symptoms of dizziness and shortness of breath) from normal living....I am just beginning to try to find info on the internet about the possible connection between digestion and a-fib....thanks and if you know any other site references, I would appreciate knowing about them....Boy, would I love to get off of the medicines!!!

Thanks for your time,
Anne B.

Hi Anne,

Myself and Mike F. probably do the most agitating with regards to the connection between GERD and afib. We are both firm believers that the connection is much stronger than most people believe.

If you use the search function on the bulletin board and look up "Mike F. V43 " and "Dean" by author you will find many interesting posts and discussions on the GERD link.

Dean

The possible role of the enteric nervous system in initiating AF episodes certainly rings true for me. I have been a LAFer for 4 years, and was one of Hans' "heavy hitters" whose survey responses were not included in the final statistics because they would skew the results too much. From the beginning my stomach has seemed to be player in many AF episodes, but especially during the last year. In the six months ending in January, 71 of 82 daytime episodes were preceded by "stomach discomfort" just below the sternum. In late December I started to take 40 gm of milk-free acidophilis with breakfast and dinner, and in late February I stopped having skim milk with breakfast cereal, which was the only milk product I consumed. In January and February it seemed that I was experiencing fewer incidents of stomach discomfort, and since the beginning of March there have been almost none. In January I began a 12 week AF episode which ended on the first of April. In the four and a half months since then, I've had two episodes of 7 and 5 hours, and none for 2 months. I think that the main reason I'm essentially not fibrillating anymore is that I no longer have regular incidents of stomach discomfort to trigger episodes, and I think the reason for that is my regular consumption of acidophilis or my completely milk-free diet. I have been off meds for over 2 months.

Paul
