Interview: Dr. Ghassan Bejjani

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Discussion How Chiari Surgery Has Evolved

May 31, 2007 -- Dr. Ghassan Bejjani is a neurosurgeon at the University of Pittsburgh Medical Center and a Scientific Advisor to Conquer Chiari. He treats many Chiari patients each year and has published several studies on the subject. We first interviewed Dr. Bejjani in the early days of Chiari & Syringomyelia News, and we thought we would go back to Dr. Bejjani to see what, if any, progress has been made in the fight against Chiari.

We put Dr. Bejjani back In The Spotlight...

It's been almost four years since we first spoke with you, do you think a Chiari patient diagnosed today is more likely to have a positive outcome than one diagnosed four years ago? Why?
B: I do not think that I can give you a scientific answer. Lack of good outcome data is still the main issue we have when we deal with patients with the Chiari malformation. I have been trying to set up an outcome database for adult Chiari malformation, focusing on outcomes for quite some time, with no success. I think that there is an effort in the pediatric population, but I believe that the main challenge we face is in the adult population. Failed Chiari surgery has been a challenge for me.

Has your approach to decompression surgery evolved during that time? If so, how?
B: Yes. My technique has evolved. Although it may seem simple, Chiari surgery requires a lot of attention to detail. We can keep on evolving with our techniques. We are paying attention to two more issues:
One is the possible Venturi effect from a small arachnoid tear that could lead to a subdural-extra-arachnoid fluid collection with possible alteration of the CSF dynamics around the foramen magnum. Therefore, although we try to preserve the arachnoid and keep it intact, if we have a small tear, we go ahead and enlarge it by opening the arachnoid fully. The second is the fact that some of the postoperative headaches and secondary failures of Chiari surgery can be due respectively to adhesions between the dura and muscles, and adhesions between Cerebellum and dura. The acoustic neuroma literature suggests strongly that replacing the removed bone will lead to a significant decrease in postoperative headaches, probably from preventing dura-muscle adhesion. Also, there are a few reports suggesting that re-tethering of the dura to cerebellum will lead to delayed failures, requiring re-intervention. Therefore, we started using the Chiari plate, which is a custom made plate designed to expand the volume of the posterior fossa.

What is the Chiari plate made of and how does it help?
B: The Chiari plate is made from titanium. In theory, the problem in Chiari patients is a dynamic one, caused by a mismatch between the container and the contents, usually a small posterior fossa. The goal of the surgery is to correct that mismatch, by restoring the CSF flow and enlarging the posterior fossa, and keeping it enlarged. Therefore, the intent for the use of the plate is to achieve that goal: enlarge the posterior fossa and keep it enlarged, by preventing the muscles from pushing the dural patch back.

Who makes the plate?
B: It is made by Bioplate and distributed by Codman as the BejjaniTM plate. I have a video on www.neurosurgery-web.com, in the Chiari section, that illustrates the use of the plate. We will be adding more graphics on the plate in the near future.

There is a trend among pediatric neurosurgeons to not open the dura completely during surgery, do you think this is a viable option for adult patients?
B: I believe so. I have a few cases, mostly young male patient, in whom I did not open the dura, with excellent outcomes. The management of the Chiari malformation should be tailored to the individual patients

Do you think awareness of Chiari as a treatable problem has increased in the general medical community, or is this still a big problem?
B: I do not believe the challenge regarding awareness has changed at all, including among neurosurgeons, and that is quite sad. It is alarming to see a patient in a wheelchair with a feeding tube followed by two prominent neurosurgeons and told that it is old age and that nothing can be done, even though the MRI clearly shows the malformation. That patient was back to normal within 3 month of surgery. I do not believe that the awareness has significantly increased. We try to do our best by organizing local seminars and the response is quite dismal.

You've organized a research conference on neural hydrodynamics, what is that and how does it relate to Chiari?
B: We believe that there is a group of disorders that share in common alterations of the fluid dynamics (hydrodynamics) of the CNS. These include: Hydrocephalus, Idiopathic Intracranial Hypertension, The Chiari Malformation, and Syringomyelia. These overlap significantly. We believe that by grouping these disorders together, we can achieve more. To that goal, we have been organizing a biyearly conference of the Neural hydrodynamics, that brings together researchers from all over the US and the world.

Has any research been done on what symptoms, if any, are caused by disrupting the natural flow of CSF (as opposed to direct compression of tissue)?
B: I do not believe that any research has been done on the symptoms physiopathology, however we have mentioned in our work, especially our paper on the link between Idiopathic Intracranial Hypertension and the Chiari malformation (Association of the adult Chiari malformation and idiopathic intracranial hypertension: More than a coincidence. Medical Hypotheses June 2003) that we believe that most of the

symptoms are due to a fluid dynamics alterations rather than a true neural compression, and the similarity of symptoms with those of the Idiopathic Intracranial Hypertension is very striking.

Another hot topic in the Chiari community is the apparent relationship between Chiari and EDS, have you seen any of this and do you have any thoughts on the subject?
B: I have not had direct experience with this area.

Do you think there will be any major breakthroughs in diagnosis, treatment, or understanding of Chiari in the next 4 years?
B: I think that everything is possible. We have to keep an open mind and think outside the box. When you are dealing with the complex category of diseases of Neural Hydrodynamics, you really have to stay on the innovative side. I do not know if 4 years will be enough time. Funding will be critical in expediting progress in this area. And that's where patient advocacy societies can help by increasing awareness and trying to promote the cause.
