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## **Breakthrough Publication (July 2010): FONAR UPRIGHT MRI Detects Injuries in Symptomatic Motor Vehicle Whiplash Patients Missed by Conventional Recumbent-Only MRI**

MELVILLE, NY--(Marketwire - July 21, 2010) - [FONAR Corporation](#) (NASDAQ: [FONR](#)), The Inventor of MR Scanning™ announces new breakthrough results for the FONAR UPRIGHT® Multi-Position™ MRI. The medical journal "Brain Injury" (July 2010:24(7-8):988-994) has just released the exciting results of a study of 1200 neck pain patients. The study was published by 10 authors from distinguished universities in the U.S. and around the world (University of Oregon, University of Aarhus, Denmark, University of Aberdeen, Scotland, Columbia University, Portland State University) of their results from the scans of 1200 patients. Their study reported that 150% more whiplash patients (Table II - % CTE Trauma Patients) had demonstrable radiographic pathology when scanned upright than when they were scanned lying down (recumbent). Their investigation also reported that "patients with a history of motor vehicle crash-associated neck pain have a substantially higher frequency of cerebellar tonsillar ectopia (CTE)\* of 1mm or more than non-traumatic subjects" when examined by the FONAR UPRIGHT® MRI. The authors were Michael D. Freeman, Scott Rosa, David Harshfield, Francis Smith, Robert Bennett, Christopher J. Centeno, Ezriel Kornel, Ake Nystrom, Dan Heffez and Sean S. Kohles.

As the authors reported, the frequency of these fallen cerebellar tonsils (CTE)\* was found "4 times more often" in neck pain patients who had experienced whiplash trauma versus neck pain patients that had not experienced recent trauma, when the FONAR UPRIGHT® MRI scanner was used.

The authors further reported, "CTE (tonsil ectopia) was found 2.5 times more often in the upright trauma vs. the recumbent group" if the patients were scanned in the FONAR UPRIGHT® Multi-Position™ MRI. In sum the anatomic origin of the patient's whiplash symptoms was successfully visualized 2.5 times more frequently when the patient was scanned upright in the FONAR UPRIGHT® Multi-Position™ MRI than when he/she was scanned lying down in the conventional recumbent-only MRI.

The upright MRI examination, therefore, now makes it possible to provide definitive radiographic evidence and image characterization of the pathology giving rise to a patient's whiplash symptoms so that it can be medically treated. For the first time, definitive anatomic evidence of the injuries sustained by whiplash victims in a motor vehicle accident can be provided. Currently, as the authors point out, some claim that patient whiplash pain is "non-pathologic chronic pain" engendered by "psychosocial factors such as litigation." The newly published results from the FONAR UPRIGHT® Multi-Position™ MRI establish that this is not correct.

The July 2010 published report of 1200 neck pain patients that were examined in both the recumbent position in a conventional MRI and upright in the FONAR UPRIGHT® Multi-Position™ MRI establishes a "new standard of care" for victims of automotive whiplash injuries wherein the patients' injuries can now be anatomically visualized and specifically defined so that the most expedient medical treatment can be provided.

Overall, the pathologic anatomy responsible for the patient's whiplash symptoms was successfully identified in 23.3% of whiplash trauma patients (Table II, Brain Injury, July 2010: 24 (7-8):998) when the patient was scanned upright in the FONAR UPRIGHT® Multi-Position™ MRI. The cause of the patient's symptoms was identified after a whiplash injury only 9.3% of the time (Table II) when the patient was lying down in a conventional recumbent-only MRI, a difference of 2 1/2 times or 150%.

Raymond V. Damadian, M.D., president and founder of FONAR said, "it has been published(1) that there are approximately 3,000,000 REAR IMPACT(2) crash related (or CAD(3)) INJURIES(2) in the U.S.

annually. Accordingly, the publication by M.D. Freeman and co-authors in the July 2010 issue of "Brain Injury" has established that of the 3,000,000 motor vehicle CAD injuries occurring annually in the U.S. 700,000 (23.3%) would exhibit cranio-cervical anatomic changes associated with their symptoms when examined upright in the FONAR UPRIGHT® Multi-Position™ MRI, while only 279,000 would have their pathology detected by a conventional lie-down MRI. At the rate of 3,000,000 CAD whiplash injuries per year, 420,000 patients each year would have the pathology responsible for their symptoms go undetected if they were examined solely in a conventional recumbent-only MRI."

Dr. Damadian further stressed, "the sudden rise in the incidence of patients suffering from the Chiari syndrome (cerebellar tonsil ectopia) is a fairly recent occurrence that needs to be addressed by both the medical and automotive professions. As Galasko et. al. from the University of Manchester, Salford, U.K., reported regarding the change in the incidence of whiplash disorders following the 1982 enactment of seat-belt legislation in the U.K. (J. Musculoskeletal Pain, Vol 8. (1/2) pgs 15-27), the incidence of whiplash associated disorders (WAD) rose "far in excess of general road traffic accident cases," and as they also reported, "rose at an alarming rate".

"Consequently," Dr. Damadian stated, "it is very important that the approximately 3,000,000 people per year in the U.S. involved in the rear end auto collisions that give rise to whiplash injuries, receive an UPRIGHT® MRI examination soon after the accident. This will assure that a cerebellar tonsil ectopia has not resulted from the accident so that they can be protected going forward, and protected before they become symptomatic. If found to have CTE, they can then be warned by their physicians to exercise especial caution whenever driving and to have devices like the head restraint impact suppressor cushions installed (add On Head Rest, [www.addonheadrest.com](http://www.addonheadrest.com)) to prevent the whiplash reaction from occurring again in the event of a collision.

"A real concern," added Dr. Damadian, "is that a subsequent auto-accident for a patient who had developed tonsil ectopia from a prior auto accident, but did not develop symptoms from the ectopia, can subsequently develop symptoms from even a MINOR subsequent accident. Wan, et. al. (Wan, M. J., Nomura, H., Tator, C. H. Neurosurg. 2008; 63: 748-753.), described a symptomatic "conversion" of previously asymptomatic Chiari Type 1 following MINOR(2) head and neck trauma" (Freeman, M. D. et. al. Brain Injury, July 2010: 24 (7-8):989.

Considering that long term studies have shown that some patients suffered frequent residual symptoms 17 years after the accident, mostly comprising neck pain, radiating pain and headaches, (Eur. Spine J. 2002; 11:227-34), this publication in "Brain Injury" clearly demonstrates the need and the superiority of the FONAR UPRIGHT® Multi-Position™ MRI for imaging patients involved in motor vehicle crashes that sustain whiplash injuries.

\* Cerebellar tonsillar ectopia (CTE) constitutes downward displacement of the cerebellum of the brain into the opening in the bottom of the skull, the foramen magnum, through which the spinal cord exits the skull. The downward displacement can result in compression of the medulla of the brain, fourth ventricle and cerebellar vermis, giving rise to neck pain, chronic recurrent occipital headaches, upper extremity weakness and "drop attacks". While afflicting a low percentage of Chiari 1 patients, such patients can be subject to instantaneous unpredictable losses of consciousness known as "drop attacks" in which the standing patient, without warning, suddenly collapses to the floor.

(1) Foreman, S. M., Croft, A. C. (eds) third edition. Whiplash injuries: The cervical acceleration/deceleration syndrome. Baltimore: Lippincott, Williams & Wilkins, 2001, Pg. 359.

(2) Capitalization added.

(3) Cervical Acceleration/Deceleration syndrome aka "whiplash".

To obtain a copy of the article published in the peer-reviewed journal, "Brain Injury," please contact FONAR at 631-694-2929x451 or by email at [d.culver@fonar.com](mailto:d.culver@fonar.com). You may also use a search engine such as Google and search for the journal article entitled "A case-control study of cerebellar tonsillar ectopia (Chiari) and head/neck trauma (whiplash).  
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