Flying With MAMA

by Rachel Baughn

That radio is an integral part of modern life is a fact none of us would dispute, but occasionally we encounter its use in ways which, though fascinating in themselves, we would never care to repeat -- ever.

Such was the case on Sunday evening, February 28, when after experiencing an unusual headache the majority of the day, I suffered a paralysis on my left side. Our local hospital is quite small and has only limited facilities. The doctor on duty felt it was urgent that a CAT scan be done as soon as possible to rule out a tumor or major hemorrhaging. And so MAMA (Mission Air Medical Ambulance) was called.

A Memorable Ride

In mountainous areas such as ours, the medical airlift is literally a lifesaver. Once airborne, the helicopter arrived from Asheville in 35 minutes (a trip of 2-1/2 hours on the ground). The three-man team was considerate and efficient, but I felt bundled up like a mummy as they pushed me head-first into the coffin-sized opening in the tail for my very first helicopter ride.

My husband, meanwhile, had been busy making the necessary phone calls and arrangements, including a call to my employers, Bob and Judy Grove. Frustrated and anxious at the few details Harry had given them, Bob punched up the frequency used by the MAMA team (see sidebar) and tuned in the report radioed to Memorial Mission Hospital in Asheville... *She's regained use of speech and partial use of left side... condition stabilized...*

I heard the report, too. With an oxygen mask on, I couldn't talk and over the noise of the helicopter it would have been difficult to hear, so I received a pair of earphones as well. I not only heard the paramedic extolling the beauty of the full moon, indicating landmarks as we flew by, and checking periodically on my condition, I also heard the pilot communications and reports from another ambulance team working on a belligerent stabbing victim! (Later I discovered it was a Knoxville, TN, team sharing that frequency.)

MAMA sits on its pad at Memorial Mission awaiting its next assignment which could be in any of several surrounding counties (photo by Harry Baughn).

Medical Communications

Lifesaving efforts by medical teams, whether at hospitals, in ambulances (land and air) or on an accident scene, require reliable radio communications. In the United States, these communications are in narrowband FM mode and will be heard in the VHF low, high or UHF bands.

Air ambulances are authorized to use normal 118-136 and 225-400 MHz AM air-to-ground channels and, in order to contact hospitals and police agencies, frequencies normally reserved for FM land mobile services. Wulfberg frequency-programmable transceivers are most commonly installed in these aircraft.

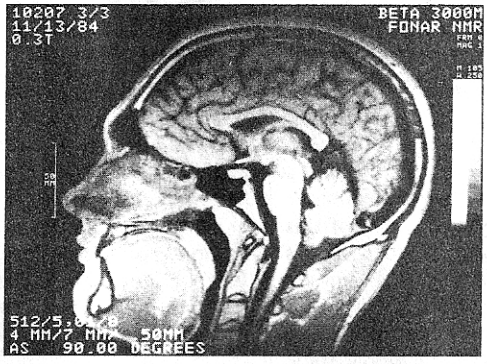
The following frequencies (MHz) are most commonly used for hospital/ambulance emergency communications:

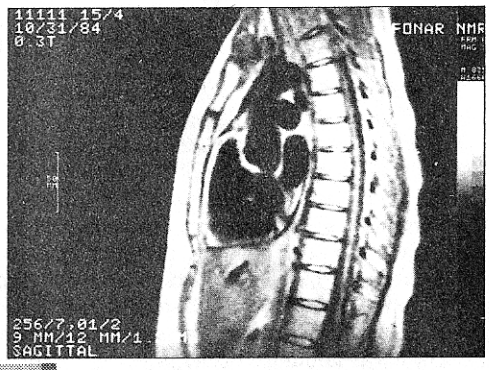
155.325	155.340	155.355	155.385
155.400	462.950	462.975	463.000
463.025	463.050	463.075	463.100
463.125	463.150	463.175	

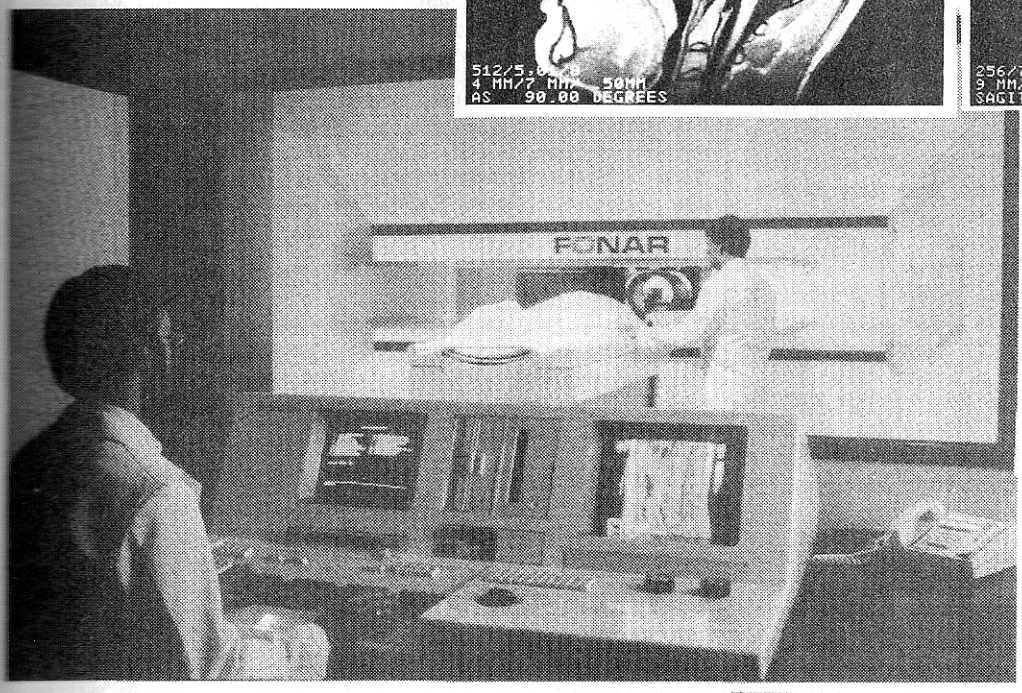
From the familiar to the exotic

We've all become accustomed to the miracle of radio -- waves that pass through matter and provide meaningful communication -- though I'm certainly not used to being the subject under discussion! But during the extensive testing I underwent to determine exactly what had happened to me, one of the most futuristic tests utilized radio waves to explore the *inside* of the body.

Called magnetic resonance imaging (MRI), it provides more detail than X-rays without the corresponding danger. It is composed of a powerful Tesla Fonar magnet which creates a strong magnetic field around the body. When hydrogen atoms (plentiful in the human body because of the high content of water) are placed in this magnetic field and exposed to radio frequency waves around 13560 kHz, they give off radio signals (resonance) which can be detected by sensitive antennas.







MR provides contrast and clarity in areas of the body previously difficult to define.

The radio transmitter and sensitive antennae are contained within a collar or a hood placed around the area to be studied. No radiation or x-rays or injections are required. Just the ability to lie motionless in a slightly claustrophobic enclosure!

Each kind of tissue produces a different signal, and normal tissue gives off a different signal than diseased tissue. Obviously the real sophistication resides in the computer required to analyze the millions of data necessary to produce the total picture.

Oh -- in case you're wondering, the conclusive diagnosis was achieved the "old-fashioned" way. An arteriogram showed up a "spontaneous dissection of the right carotid" -- extremely rare and unlikely to happen again.

And the treatment? Take two aspirin and hope for the best. The body is still its own best healer. But I'm glad hi-technology and MAMA were there -- just in case.

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Rachel Baughn is responsible for the production and design of Monitoring Times. We all wish to thank Judy Grove for stepping into the middle of the April issue and successfully completing it by deadline -- especially since editor Larry Miller was also confined to the hospital for a few days. In fact, April could have been called the issue that put the staff to bed!

We are happy to report that except for some lingering numbness in one arm and hand, Rachel is recovered and back on the job!

ISM

Industrial, scientific and medical equipment often require radio frequency energy to effect their intended purposes. Some apparatus can emit high intensity energy into the electromagnetic spectrum, often being heard for hundreds or even thousands of miles.

Examples of equipment utilizing this type of energy include induction heaters, RF welders, intrusion alarms, diathermy machines and microwave ovens.

To prevent such equipment from causing widespread interference to other users of the radio spectrum, discrete frequencies are allocated for those purposes. Tune your receiver to one or more of these channels and be treated to a symphony of cacaphonous noises!

The following frequencies are authorized for ISM applications in the United States and may be received on conventional shortwave and scanner receivers: 6.78, 13.56, 27.12, 40.68 and 915 MHz.