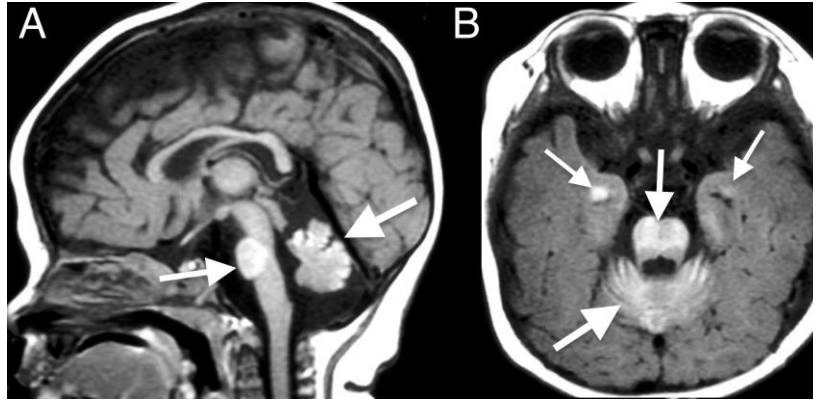


## **Brain MRI in Patients with Large Congenital Melanocytic Nevi**

by A. James Barkovich, M.D.



It is often recommended that patients with large congenital melanocytic nevi have MRI exams. The main reason to get MRI of the brain is to look for the presence of melanin in the brain. Melanin is the pigment in nevi. Because it has unpaired electrons, melanin causes changes in the magnetic character of water protons, allowing us to see areas of melanin by using magnetic resonance imaging (MRI). It is important to acquire the MRI properly in order to maximize your ability to see any melanin that might be in the brain.

### **What is an MRI?**

The MRI machine is like a big tube; they are shorter than they used to be, but still quite long. The tube is a big electromagnet with tanks of liquid helium and liquid nitrogen around it to keep it cool enough to work properly. The water molecules in your body are temporarily made into small magnets by the MR scanner. This has no effect on your body, but it allows the magnet to generate pictures of various parts of your body. A lot of electronic circuits are also in the walls of the tube. These circuits alter the magnetic field and sense how the water molecules in your body react to the magnetic field. Water molecules in blood react differently than ones in your liver, for example, and both of those react differently than the ones in your brain. These circuits make the noise that you hear during the scan.

### **What is the best MR technique when looking for melanin in the brain?**

I would recommend brain and spine imaging on a 3T MRI. 1.5T is still adequate, but not as good because images take longer, which means more sedation and there is more chance of motion artifact. For the brain, use a T1-weighted volumetric (3D) acquisition, with and without contrast, and reformatting the images at 1 mm slice thickness in the axial, coronal, and sagittal planes. Always ask to get the T1 images first because they are more important/give more information.

T2 images can be useful, so continue to get 2D (not volumetric) T2 –weighted images in the axial and coronal planes, using a Fast Spin Echo (or Turbo Spin Echo) technique. In my opinion, the 3D T2 images are not yet good enough in babies. I have not seen primary melanosis in the spine but, if there is melanosis in the brain, I think the spine should be screened on the initial MRI. These should be 2D images, T1 and T2 weighted.

That should be sufficient if there is no motion artifact.

If you choose to have an MRI, earlier is better because the melanosis becomes more difficult to see as the brain myelinates.