

THE WADA TEST

What is the purpose of the Wada test?

The Wada test (named after Juhn Wada and also called “intracarotid amobarbital test”) is a procedure done to determine which side of the brain controls language function and to measure memory function of each side of the brain separately. In almost all right-handed and most left-handed people the left hemisphere controls language. The right hemisphere controls language in some left-handed people.

How is the Wada test performed?

The Wada test has three parts:

1. Placement of EEG wires to measure brain wave activity is done in the EEG Laboratory.
2. A cerebral angiogram is performed in the Radiology Department. A catheter is placed into a blood vessel in the leg by a radiologist. The catheter is threaded through the blood vessels into the main blood vessel to one side of the brain. An angiogram is performed for x-ray visualization of the blood vessels by injection of contrast dye through the catheter into the blood vessels. This is the same type of angiogram that is done routinely to look for narrowed arteries or aneurysms.
3. The “Wada” portion of the test of memory and language function is performed by numbing one side of the brain. The radiologist will inject Amobarbital through the catheter into the blood vessel to numb one side of the brain. The purpose of this injection is to temporarily put one side of the brain “to sleep” in order to test the awake side. Once injected, you will answer a battery of questions to measure memory and language of the awake side of the brain. The amobarbital wears off in about 5 minutes. Next, the catheter will be moved to the main blood vessels on the other side of the brain and amobarbital will again be injected to temporarily put the other side of the brain to sleep. Similar questions to test memory and language will be asked.

Does the Wada test hurt?

You will receive local anesthetic prior to the placement of the catheter so it doesn’t hurt very much.

How are the results of the Wada test used?

Understanding the significance of the Wada test is not simple. If surgery is performed on the side of the brain (or “hemisphere”) that controls language then the surgery must be planned to avoid injuring language areas. If surgery is planned involving the memory area of the brain and memory is very good in that side then the surgery may be modified to preserve memory as best possible.

How long does the test take?

You will be seen in the Epilepsy Clinic for a clinic visit and blood work one day and then have the Wada test the next day. On the day of your Wada test, you will come to the EEG laboratory in the main hospital to have EEG electrodes placed on your scalp in the early morning and typically be done with the test by noon. However, you will be required to lay flat for between 3-6 hours after the test and most likely will be able to go home in the evening.

Do I have to spend the night in the hospital?

It is not routinely necessary to spend the night in the hospital.

Are there any risks associated with the Wada test?

It is usually very well tolerated with a very low risk of harm or injury. There is a small risk of bleeding or infection at the catheter insertion site or kidney damage from the contrast dye. There is a less than 1% chance of developing a stroke or other important problem.

Jennifer Langer, MD 11/18/09