PATIENT & CAREGIVER EDUCATION

Leptomeningeal Metastases

This information describes leptomeningeal metastases (LEP-toh-meh-NIN-jee-ul meh-TAS-tuh-SEEZ) and explains how they're treated.

About Leptomeningeal Metastases

Cells from some types of cancer, such as breast cancer, lung cancer, and melanoma, can sometimes spread to your meninges, cerebrospinal fluid (CSF), or both.

- Your meninges are the layers of tissue that cover and protect your brain and spinal cord. They're sometimes described as a jacket or envelope.
- CSF is a clear liquid found between the layers of your leptomeninges. CSF is constantly being produced by your brain and drained through your leptomeninges into your venous system. The purpose of this fluid is to help cushion your brain and spinal cord

When cancer cells are found in your leptomeninges or CSF, this is called leptomeningeal metastases (LM). LM stick onto nerves as they exit your brain and spinal cord, causing weakness and numbness. LM can also clog your leptomeninges and prevent CSF from being drained properly, causing CSF and pressure to build up inside of your brain.

Symptoms of Leptomeningeal Metastases

LM can cause many different symptoms, such as:

- Headaches
- Nausea (feeling like you're going to throw up) or vomiting (throwing up)
- Difficulty thinking

- Double vision
- Dizziness
- Difficulty speaking or swallowing
- Pain in your arms and legs
- Weakness or lack of coordination in your arms and legs
- Loss of bladder or bowel control
- Seizures

You may have 1 or more of these symptoms. Having 1 symptom doesn't mean you will get others.

Diagnosing Leptomeningeal Metastases

Magnetic resonance imaging (MRI) scan

If your healthcare provider thinks you have LM, you might have a magnetic resonance imaging (MRI) scan of your brain or spine. An MRI scan can be used to diagnose LM.

Lumbar puncture

Your healthcare provider might want to do a lumbar puncture (sometimes called "LP" or a spinal tap) to remove a small amount of CSF and look for cancer cells in your CSF.

During a lumbar puncture, your healthcare provider will give you a local injection (shot) of lidocaine (a medication to numb the skin on your lower back). Then, your healthcare provider will put a needle through your skin and into your spinal canal, below the level of your spinal cord. This procedure allows your healthcare provider to remove a sample of CSF, which will be sent to the pathology department for review.

A lumbar puncture also allows your healthcare provider to measure the pressure within your brain. If your pressure is found to be high, removal of a larger amount of CSF through a lumbar puncture can help to temporarily reduce your symptoms of increased pressure.

If any cancer cells are found in your CSF, it means you have LM. You might need to have more than one lumbar puncture, because it can be hard to find cancer cells in CSF.

Treatment for Leptomeningeal Metastases

The goal of treatment for LM is to relieve your symptoms and try to kill the cancer cells in your meninges and CSF. You might have radiation therapy, chemotherapy, or both. The type of treatment your healthcare provider thinks is best depends on the type of cancer you have, your symptoms, and your test results. Your healthcare provider will talk with you and your family about your treatment plan.

Radiation therapy

You might get radiation therapy in places where clusters of cancer cells are causing symptoms, such as your head, areas on your spinal cord, or both. Sometimes, radiation therapy is given to one area first and to another area later.

Radiation therapy is usually given in an outpatient center, but it can also be given while you're in the hospital. You and your healthcare provider will make this decision together.

Chemotherapy

Chemotherapy for LM is given in 3 different ways:

- By swallowing a pill (oral chemotherapy)
- Through a needle in your vein (intravenous (IV) chemotherapy)
- Directly into your CSF (intrathecal or intra-Ommaya chemotherapy)

Your healthcare provider will choose which type of chemotherapy is best for you. Different types of cancer respond best to different types of chemotherapies.

If you're getting chemotherapy directly into your CSF, it will probably be done with an Ommaya reservoir. An Ommaya reservoir is a dome-shaped device

that's placed under your scalp during a surgery. It has a small tube that connects it to the areas of your brain where CSF is made. Chemotherapy given this way has very few side effects because only a small dose is needed to treat the cancer cells in the CSF.

Before the surgery to place your Ommaya reservoir, you will get general anesthesia (medication to make you sleep). The surgery takes about 1 hour. When the anesthesia wears off, you will have some discomfort at your incision site (the place where the cut was made to place the reservoir). Ask your nurse for the resource *Frequently Asked Questions About Ommaya Reservoirs and Ommaya Taps* (www.mskcc.org/pe/ommaya-reservoirs-taps) for more information.

Even if you have an Ommaya reservoir, you might also get intrathecal chemotherapy through a lumbar puncture, IV chemotherapy, or oral chemotherapy. This is to help control both your primary cancer and the LM.

Appointments during your treatment

While you're having treatment for LM, your healthcare team will monitor you closely. You may have MRI scans, lumbar punctures, or both every 6 to 12 weeks. You may also have a physical exam in clinic every 6 to 12 weeks.

Caring for Yourself During Your Treatment

There are many ways we can help you manage the symptoms of LM. It's important to tell your healthcare provider about any problems, changes, or improvements in your symptoms. This helps us know how your treatment is going and helps us decide if we need to make any changes to your treatment plan.

Being diagnosed with LM can cause anxiety. Your healthcare provider's and social worker are available if you want to discuss your concerns about LM, your primary cancer, or both.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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