

Primary Central Nervous System Lymphoma (PCNSL)



OVERVIEW

Lymphoma is the 6th most common cancer in Australia in adult men and women. It can affect people of all ages and is the most common blood cancer. Lymphoma is a cancer of the immune system and affects lymphocytes which are a type of white blood cell. When lymphocytes gain DNA mutations they divide and grow uncontrollably resulting in lymphoma.

There are two main types of lymphocytes called B lymphocytes (B-cells) and T lymphocytes (T-cells). Lymphomas caused by B-cells are more common and account for around 85% of lymphoma cases and lymphomas caused by T-cells account for around 15% of lymphoma cases. The first lymphoma to be discovered was called "Hodgkin lymphoma" (around 15% of all B-cell lymphomas), after Thomas Hodgkin, who described it. All subsequent lymphomas discovered were called "non-Hodgkin lymphoma" (around 90% of all lymphomas, both B-cell & T-cell lymphomas).

There are over 80 different subtypes of lymphoma, that are classified according to its clinical behaviour. "Aggressive" (high grade or fast growing) lymphomas are those that grow quickly, usually weeks to months and need treatment immediately. "Indolent" (low grade or slow growing) lymphomas usually develop over years and often are not treated straight away but are monitored. It is important to know your subtype of lymphoma. Lymphoma cells can travel to any part of the body and be found in lymph nodes, the bone marrow, the spleen, blood, bone, skin and almost any organ or tissue.

Primary Central Nervous System Lymphoma (PCNSL) is an aggressive form of lymphoma in which lymphoma cells form in the brain and/or spinal cord. In more than 90% of cases it is a B-cell lymphoma that may develop in the brain, spinal cord, eye or leptomeninges (the two membranes that surround the brain and spinal cord). When lymphoma has originated in other parts of the body and at some stage has spread to the brain or spinal cord this is referred to as secondary CNS lymphoma. The main symptoms of PCNSL are focal neurological deficits such as problems with nerve, spinal cord or brain function, and headaches, vomiting, confusion, seizures, personality changes, and blurred vision can occur.

The cause of PCNSL is unknown as is the case with many

lymphomas but there are some factors that may increase the risk of developing it such as a compromised immune system (for example people living with AIDS or patients after an organ transplant), exposure to chemicals and pesticides, solvents or fertilisers and a family history of non-Hodgkin lymphoma. Most people with these risk factors do not develop PCNSL and some people that are diagnosed with PCNSL may have none of these risk factors.

DIAGNOSIS AND STAGING

A biopsy is always required for a diagnosis of PCNSL. A biopsy is a surgical procedure to remove part of or all of an affected lymph node or other abnormal tissue to look at it under the microscope. The biopsy can be done under local or general anaesthetic depending on what part of the body is being biopsied.

Once a diagnosis of PCNSL is made there are further tests that need to be performed to see where else in the body the lymphoma may be and is referred as staging. Because PCNSL is a blood cancer the lymphoma can travel all over the body, so it is important that a check of the entire body is done looking for the lymphoma. Staging tests may include:

- Magnetic resonance imaging (MRI)
- Positron emission tomography (PET) /CT scan
- Computed tomography (CT) scan
- Bone marrow biopsy
- Lumbar puncture

Patients will also undergo a number of baseline tests prior to any treatment commencing to check their organ function and these baseline tests may include a heart scan, kidney scan, breathing test and blood tests.

TREATMENT OPTIONS

Until the mid 1990's radiotherapy was the main stay of treatment for PCNSL. Now high dose methotrexate-based chemotherapy combined with or without the monoclonal antibody rituximab is given. Younger patients are also offered what we refer to as a consolidation treatment with either radiotherapy or high dose chemotherapy and stem cell transplant to decrease the risk of the PCNSL ever coming back.

FACT SHEET

If lymphoma cells are found in the spinal fluid the patient may also receive chemotherapy into the spinal fluid by the means of a lumbar puncture procedure in addition to the above treatment.

The details of your treatment will vary depending on the stage of the PCNSL and general fitness. The side effects from treatment varies between the different types of treatment. The majority of these treatments are given as an inpatient meaning you are admitted to the hospital for a certain amount of days to administer the treatment then you are followed up in the outpatient clinics in between treatments. PCNSL usually responds well to treatment but in some people the lymphoma comes back (relapses) and further treatment is needed

TREATMENTS UNDER INVESTIGATION

Many new individual and combination medicines are currently being tested in clinical trials around the world for both newly diagnosed and relapsed/refractory PCNSL including:

- Ibrutinib (Imbruvica[®])
- Lenalidomide (Revlimid[®])
- Nivolumab (Opdivo[®])
- Obinutuzumab (Gazyva[®])
- Pembrolizumab (Keytruda[®])

CLINICAL TRIALS

Clinical trials are essential in identifying effective medicines and determining optimal doses of these medicines for people diagnosed with lymphoma. People who are interested in participating in a clinical trial can find one using the following methods:

- Speak to their specialist to see what options are available
- Go to the ClinTrial Refer website clintrial.org.au to search available clinical trials
- Download the ClinTrial Refer app from the Apple or Android stores for your smart phone or device. The ClinTrial Refer service was developed to connect patients, health professionals and clinical trial sites
- ClinicalTrials.gov is a database of privately and publicly funded clinical studies conducted around the world: clinicaltrials.gov
- See 'Understanding Clinical Trials' fact sheet

FOLLOW UP

Once treatment is completed, people with lymphoma need to be followed up by their specialist with regular appointments to monitor:

- Evaluate the effectiveness of the treatment

- Ongoing treatment side effects
- Recovery from treatment
- Signs of lymphoma relapsing
- Potential late effects caused by treatment that can occur months or years later, that can be based on the duration and frequency of treatment, age, gender and overall health of each person

RESOURCES AND SUPPORT

Organisation	How can they help?
Lymphoma Australia	<ul style="list-style-type: none">• Lymphoma Australia offers a wide variety of resources and support for people with lymphoma or CLL and their carers. Please visit our website for further information: lymphoma.org.au• Lymphoma Australia Fact sheets & booklets including:<ul style="list-style-type: none">• Booklet: What you need to know about lymphoma• Other lymphoma subtypes• Understanding Clinical Trials• Emotional impact of a lymphoma diagnosis & treatment• lymphoma.org.au/page/1218/fact-sheets• Lymphoma Australia YouTube Channel: Presentations on a variety of topics about lymphoma subtypes and management. youtube.com/user/LymphomaAustralia• Lymphoma Nurse Support Line: 1800 953 081 or email: nurse@lymphoma.org.au• Online private Facebook group: 'Lymphoma Down Under' http://bit.ly/2mrPA1k

SOME QUESTIONS TO ASK YOUR DOCTOR

- What stage of PCNSL do I have?
- Is there any additional testing that can be done to give you greater insight into how to treat my type of lymphoma?
- What are the treatment options for my type of PCNSL?
- Are there any treatment options that are better for my type of lymphoma but are yet to be funded by the PBS in Australia?
- Are there any clinical trials currently available to me?
- If you think my PCNSL has relapsed, will you do another tissue biopsy to confirm this?

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