

# Pleural Effusion

## KEY POINTS

- ➔ Approximately half of all patients with metastatic cancer will develop a pleural effusion
- ➔ Lung and breast cancer are the most common causes of a malignant pleural effusion, although it can occur in almost any type of cancer
- ➔ Patients may experience dyspnoea, dull aching chest pain, or dry cough due to fluid accumulation
- ➔ Thoracentesis (removal of the fluid) can be helpful in relieving dyspnoea in some patients
- ➔ Pleurodesis with talc or bleomycin, done after thoracentesis and drainage, may be used to prevent re-accumulation of the fluid
- ➔ A pleural effusion may be the first presenting sign of cancer, or suggestive of recurrent or advanced disease

- ➔ Children may fear invasive procedures such as thoracentesis. It is important to explain what will happen and gain the child's consent depending on his or her ability to understand



## ASSESSMENT

See comment on page 10



- ➔ A moderate to large pleural effusion can most often be diagnosed by clinical examination alone (decreased breath sounds and dullness to percussion)
- ➔ A good clinical assessment can also help to identify the underlying cause of the pleural effusion
- ➔ Pleural effusions can be caused by malignant or non-malignant processes

- ➔ Common non-malignant processes include:
  - ➔ Congestive heart failure
  - ➔ Pneumonia
  - ➔ Pulmonary embolism
  - ➔ Pancreatic disease
  - ➔ Interstitial lung disease
  - ➔ Ascites
  - ➔ Hypoalbuminaemia
- ➔ Investigations to consider may include:
  - ➔ Chest x-ray: to assess the extent of the effusion and for evidence of other diagnosis (e.g. pneumonia). Generally, if there is more than 200-300 mL of fluid this is visible on a chest x-ray
  - ➔ Chest ultrasound (including point-of-care ultrasound): smaller amounts of fluid can sometimes be detected using ultrasound
  - ➔ CT chest: can detect small amounts of fluid
  - ➔ Analysis of the pleural fluid (if removed): may help in diagnosing the underlying cause of the effusion. Malignant pleural effusions are typically exudative, but on rare occasions can be transudative

## MANAGEMENT

- ➔ The management of dyspnoea and cough are covered in the Dyspnoea and Cough sections and should be followed if these symptoms are present
- ➔ A small effusion that is not causing the patient any distress generally should NOT be drained
- ➔ Pleural effusions may spontaneously resolve with effective treatment of the underlying disease, such as congestive heart failure
- ➔ Consider drainage of the pleural fluid (thoracentesis) if the patient is highly symptomatic

*Consider only if patient is well enough to benefit*



- ➔ The risks and benefits of a thoracocentesis should be explained to the patient before proceeding. These would include hemothorax, pneumothorax, post-procedure pain, and infection

### Thoracocentesis procedure

(adapted from the *Oxford Handbook of Palliative Care*):

- ➔ It is recommended that all thoracocentesis should be done with ultrasound guidance
- ➔ The patient should be sitting, leaning forwards on a bedside table
- ➔ Choose a point in the posterior chest wall, medial to the angle of the scapula, one intercostal space below the upper limit of dullness to percussion
- ➔ On insertion be careful to avoid the inferior border of the rib
- ➔ Inject local anesthetic (e.g. **lidocaine**) wait for the area to be anaesthetized then advance the needle until pleural fluid is obtained
- ➔ Introduce a large bore cannula with a syringe attached until fluid is just obtained, then advance a further 0.5-1 cm to ensure that the cannula is in the pleural space
- ➔ Ask the patient to exhale against pursed lips (this will increase the intrathoracic pressure) and remove the metal trochar or needle and then attach a large syringe with a three-way tap
- ➔ Aspirate 50 mL at a time until drainage is complete, or the patient starts to cough, or light-headedness or chest discomfort occurs
- ➔ Remove the cannula, while having the patient take a breath, and immediately seal with an appropriate dressing
- ➔ Sometimes a chest tube is left in place while the fluid continues to drain
  - ➔ Tunnelled indwelling pleural catheters allow fluid to be drained serially and have been shown to be effective for management of dyspnoea and palliative care patients
- ➔ Pleurodesis is sometimes carried out following thoracocentesis and drainage

- ➔ It occurs by introducing inflammation of the pleura by the introduction of a sclerosing agent (such as talc or bleomycin) administered by a chest tube or indwelling catheter into the chest cavity
- ➔ Pleurodesis is not always effective and does have procedure-related side-effects including increased pain
- ➔ Patients should be evaluated on an individual basis when deciding whether to proceed with pleurodesis

*Generally, pleurodesis is indicated for individuals who are expected to live for at least several months. Consider if the patient is well enough to benefit*



- ➔ During thoracentesis monitor vital signs. Remove the quantity of fluid that gives optimum symptomatic relief. Not more than 10% of body fluid by volume per 24 hours



#### PITFALLS/CONCERNS

*In patients at the end of life phase (last hours or days), it is generally inappropriate to drain a pleural effusion, instead, provide symptom relief using pharmacological and non-pharmacological techniques (see Dyspnoea section)*



#### PALLIATIVE TIPS

- ➔ The decision whether to repeatedly perform thoracentesis or place a tunnelled catheter **must be carefully weighed** against the patient's wishes, available resources, the patient's ability to tolerate the procedure, the risks involved with repeated thoracentesis, the knowledge that the fluid will likely re-accumulate and the ability to symptomatically control dyspnoea by other non-invasive means
- ➔ It is important to remember that malignant effusions usually recur, and the fluid can re-accumulate in as little as a few days

## ➔ Serial thoracocentesis may result in loculated fluid and worsening of symptoms

### REFERENCES

- Bashour SI, Mankidy BJ, Lazarus DR. Update on the diagnosis and management of malignant pleural effusions. *Respir Med*. 2022 May 1;196:106802.
- Houlihan NG, Inzeo D, Joyce M, Tyson LB. Symptom management of lung cancer. *Clin J Oncol Nurs*. 2004 Dec;8(6):642-5.
- Kvale PA, Simoff M, Prakash UB. American College of Chest Physicians. Lung cancer. Palliative care. *Chest*. 2003 Jan;123(1 Suppl):284S-311S.
- Neragi-Miandoab S. Malignant pleural effusion, current and evolving approaches for its diagnosis and management. *Lung Cancer*. 2006;54:1-9.
- Schembri F, Ferguson JS. Is There a TIME and Place for Thrombolytics in Malignant Pleural Effusions? *Am J Respir Crit Care Med*. 2018 Feb 15;197(4):422-3.
- Shaw P, Agarwal R. Pleurodesis for malignant pleural effusions. *Cochrane Database of Systematic Reviews*. 2004;(1):CD002916.
- Shuey K, Payne Y. Malignant pleural effusion. *Clin J Oncol Nurs*. 2005;9(5):529-532.
- Tassi GF, Cardillo G, Marchetti GP, et al. Diagnostic and therapeutical management of malignant pleural effusion. *Annal Oncol*. 2006;12(Supplement 2):ii11-ii12.
- Van Meter MEM, McKee KY, Kohlwes RJ. Efficacy and Safety of Tunneled Pleural Catheters in Adults with Malignant Pleural Effusions: A Systematic Review. *J Gen Intern Med*. 2011 Jan 1;26(1):70-76.
- Watson M, Lucas C, Hoy A, Back I. *Oxford Handbook of Palliative Care*. Oxford: Oxford University Press; 2005.