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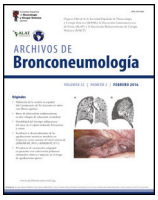

Editorial

Multimodal Approaches Toward Management of Malignant Pleural Effusion: Establishing Treatment Goals is Paramount

It is well recognised that definitive intervention for symptomatic malignant pleural effusion (MPE) is necessary to provide long-term symptom control (outside of an end-of-life care setting), with 94% (106/113) of patients requiring a repeat pleural procedure for fluid recurrence following initial therapeutic aspiration.[1] Historically, this has taken the form of a chemical pleurodesis, but indwelling pleural catheters (IPCs) are now established as an alternative first line approach.[2] More recently, evidence that different interventions may be combined in a single procedure and that IPCs may be utilised in different ways has expanded the range of available options for MPE control. This presents the modern-day chest physician with wider scope to address individual patient preferences, however, such a broad range of options may make it harder for patients to decide on the best strategy. Eliciting individual treatment goals is thus more relevant than ever before.

Day-case IPC insertion enables fluid drainage to be performed at the patient's home by nurses or trained family members, with complete outpatient management (median length of initial hospital stay 0 days vs 4 days in patients undergoing chest tube insertion and talc slurry pleurodesis).[3] Patient reported breathlessness improvement is demonstrated to be equivalent to chemical pleurodesis.[4] Importantly for those wishing to avoid repeat procedures, IPCs confer a reduced risk of requiring repeat invasive pleural intervention for fluid management.[2] Complications do need to be considered, with localised cellulitis five times more common than in patients undergoing talc slurry pleurodesis.[5] Less frequently pleural infection may develop, however this can usually be managed without need for IPC removal.[6] Recent evidence is reassuring that systemic anticancer therapy and immunocompromise do not increase risk of superficial or deep pleural IPC related infection.[7] Patients should therefore not be deterred from electing for an IPC based strategy if undergoing antineoplastic treatment. Enabling patients to spend their remaining life span out of hospital is a key advantage of IPCs when used as a first line option, and therefore preferable for individuals wishing to avoid an inpatient admission. Non-expandable lung (NEL), which precludes attempted pleurodesis, is another important circumstance in which IPCs should be considered first-line for definitive MPE management.

Whilst primarily intended as a means of fluid control rather than to effect a pleurodesis, use of the IPC may be tailored to reflect individual treatment preferences where catheter removal is an important goal. Daily drainage regimes have been shown to increase pleurodesis success, with autopleurodesis rates of 47% and 37% in patients undergoing daily IPC drainage compared to 24% and 11% of patients receiving alternate day or symptom guided regimes respectively.[8,9] Administering talc slurry via the IPC also increases rates of successful pleurodesis, with 43% of patients receiving talc vs 23% receiving saline placebo achieving cessation of fluid drainage at day 35 in the IPC Plus study.[10] For patients without significant lung entrapment, one may therefore ask why measures to enhance pleurodesis success would not be attempted, particularly for those who remain independent and keen to avoid the lifestyle restrictions that long term IPC use may impose.

Combining therapeutic interventions with a single procedure is an additional area of recent research interest. Aims of a combined strategy are two-fold; firstly to reduce time spent in hospital and the number of overall invasive procedures (particularly for those requiring both diagnostic and therapeutic interventions), and secondly to optimise pleurodesis success rates. IPC placement during thoracoscopy is an example and may be considered in patients with recurrent symptomatic MPE where tissue samples are required for molecular testing, or if undergoing thoracoscopy with known NEL.[11] Adhesiolysis at thoracoscopy, post biopsy pleural inflammation and complete drainage of the effusion at time of IPC placement may explain why enhanced rates of spontaneous pleurodesis have been observed in those without NEL undergoing combined thoracoscopy and IPC placement compared to standard IPC placement alone.[12,13]

Two single centre observational studies have explored 'rapid pleurodesis' protocols, combining thoracoscopy with talc poudrage and IPC insertion in a single procedure. Reddy et al. hypothesised that a decreased length of hospital stay, reduced number of days with an IPC in place and improved quality of life would be seen in patients undergoing their protocol. Pleurodesis success with subsequent IPC removal was observed in 92% of participants (24/26) at 6 months, with median time to IPC removal of 7.5 days post-procedure.[14] In a modified procedure (placing the IPC through the two 10 mm pleuroscopy ports), Boujaoude et al. demonstrated that 23/25 (92%) had a successful pleurodesis at one month, maintained in 17/18 (94%) patients who remained alive at 6 months. Borg dyspnoea scores improved in all patients. Median length of hospital stay was reduced compared to historical controls undergoing thoracoscopy and talc poudrage with intrapleural doxycycline (3 days in rapid pleurodesis group vs 9 days in control, $P = 0.002$).[15]

A current lack of randomised controlled evidence precludes recommendation of combined thoracoscopy, talc and IPC, although this will be addressed by the forthcoming multicentre randomised controlled trial TACTIC.[16] If future research does support guideline

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recommendation for a 'rapid pleurodesis' protocol, the question of whether to combine pleurodesis and IPC placement during diagnostic thoracoscopy will ultimately depend on an individualised assessment of patient preference, functional status and clinician expertise. It is likely that this will be most relevant to patients of good performance status with a robust social support network who wish to minimise the length of hospital admission post procedure, reduce duration of IPC requirement or reduce risk of requiring future interventions.

In the era of personalised medicine, we have much still to understand about MPE before we can offer truly individualised therapeutic regimes. Despite research developments over the last decade, treatment options remain palliative. Future advances in our understanding of MPE phenotypes may translate into novel targeted therapies and better tools for prognostication may enhance treatment algorithms. For now, exploring our patients' ideas and expectations is paramount to inform discussion about therapeutic options for MPE control and decide on a management strategy. Acknowledging that large amounts of information are often given during a consultation and consequently, that patients may need time to reflect and discuss priorities with relatives or carers is also essential in the collaborative decision making process.

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