Best evidence topic - Thoracic oncologic

Does video-assisted thoracoscopic decortication in advanced malignant mesothelioma improve prognosis?

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Received 29 October 2008; received in revised form 16 December 2008; accepted 18 December 2008

Summary

A best evidence topic in thoracic surgery was written according to a structured protocol. The question addressed was: Does video-assisted thoracoscopic (VATS) decortication in advanced malignant mesothelioma improve prognosis? Altogether more than 25 papers were found using the reported search, of which five represented the best evidence to answer the clinical question. The authors, journal, date and country of publication, patient group studied, study type, relevant outcomes and results of these papers are tabulated. We conclude that VATS decortication is useful as a palliative measure in advanced malignant mesothelioma. VATS provides a diagnostic tool, yielding tissue for histological diagnosis. Secondly, drainage of effusion and pleurectomy/decortication improves the quality of life and may increase survival as well.

Keywords: Evidence based medicine; Mesothelioma; VATS; Survival; Prognosis

1. Introduction

A best evidence topic was constructed according to a structured protocol. This is fully described in the ICVTS [1].

2. Three-part question

In [patients with advanced malignant mesothelioma] does [VATS decortication] improve [prognosis]?

3. Clinical scenario

A relative of one of your close friends is admitted to a hospital. You are requested to see this old frail man who had a large pleural effusion. The pleural effusion has been drained using an intercostal drain but the lung has failed to re-expand completely. He is suspected to have pleural mesothelioma. Your friend asks if he can have a VATS decortication. You wonder if having a VATS decortication would benefit the patient. You resolve to check the literature for evidence.

4. Search strategy


5. Search outcome

Twenty-five papers were found using the reported search. From these five papers were identified that provided the best evidence to answer the question. These are presented in Table 1.

6. Results

Nakas et al. [2] studied 208 patients having a therapeutic intervention for mesothelioma over a 9-year period. Of these, 67 had VATS decortication while the rest had non-VATS intervention. These included 112 patients undergoing extrapleural pneumonectomy (EPP) and 29 with open pleurectomy/decortication (P/D). They found that overall mean survival in the VATS group was 14 months while in the EPP group, it was 11.5 months, P=0.6. However, when they compared the 30-day mortality in patients ≥65 years old, they found that in the VATS group it was 7.1% compared to that in EPP group (23%) and the P/D group (12.5%). Fourteen patients (58%) had significant improvement in pain and 20 patients (83%) had improvement in dyspnea following VATS P/D. They concluded in view of similar survival rates in the three groups that VATS should be used for palliation in the selected group of patients ≥70 years old.

Halstead et al. [3] studied 79 patients with advanced malignant pleural mesothelioma (MPM), 28 of which had VATS biopsy while 51 had VATS pleurectomy/decortication. The actuarial survival in the P/D group was 416 days vs. 127 days in the biopsy alone group, P<0.001. The duration of hospital stay and the incidence of air leaks was signi-
<table>
<thead>
<tr>
<th>Author, date and country, Study type (level of evidence)</th>
<th>Patient group</th>
<th>Outcomes</th>
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<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>Nakas et al., (2008) Eur J Cardiothorac Surg, UK, [2] Prospective cohort study, level 2b</td>
<td>208 patients had therapeutic surgery for MPM over a 9-year period. 112 underwent EPP, 29 had P/D and 67 had VATS decortication</td>
<td>Postoperative stay</td>
<td>14.3 days for VATS vs. 36.6 days for EPP group, P&lt;0.05</td>
<td>This study showed a 58% improvement in pain and 83% improvement in dyspnea in VATS P/D group and suggests that VATS decortication is an effective palliation method in patients &gt; 70 years old. In &lt;70 years age group, EPP and radical P/D still offers better results</td>
</tr>
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<td>Halstead et al., (2005) Eur J Surg Oncol, UK, [3] Prospective cohort study, level 2b</td>
<td>79 patients with advanced MPM 28 underwent VATS biopsy and 51 had VATS P/D</td>
<td>Pri. end point: actuarial survival</td>
<td>127 days for biopsy group vs. 416 days for P/D group, P&lt;0.001</td>
<td>VATS P/D feasible in majority of patients and improves survival in advanced MPM</td>
</tr>
<tr>
<td>Martin-Ucar et al., (2001) Eur J Cardiothorac Surg, UK, [4] Prospective cohort study, level 2b</td>
<td>51 patients with advanced MPM undergoing palliative debulking surgery with aim of effusion drainage, lung re-expansion, pleurodesis and pleural debulking</td>
<td>Postoperative stay</td>
<td>Median of 7 days (2–17 days)</td>
<td>Type of procedure did not significantly influence survival. (P&lt;0.07). Epithelial cell type and absence of preop weight loss predicted longer survival and successful symptom control and thus this sub-group of advanced MPM benefits from debulking surgery including by VATS</td>
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<tr>
<td>Waller et al., (1995) Chest, UK, [6] Prospective cohort study, level 2b</td>
<td>19 patients with malignant pleural effusion. 13 had malignant mesothelioma, 6 had metastatic adenocarcinoma. These patients underwent parietal pleurectomy by VATS</td>
<td>Survival</td>
<td>Pleural space closed: 11 patients alive at 1–2 years Pleural space not closed: 1 patient Survived 9 months, 5 died in 1–6 months</td>
<td>VATS parietal pleurectomy safe and effective palliative measure if visceral pleura is not heavily diseased</td>
</tr>
</tbody>
</table>
significantly more in the P/D group. They concluded that VATS P/D was feasible in the majority of patients and improved survival in advanced MPM.

Martin-Ucar et al. [4] made a prospective cohort study involving 51 patients with advanced malignant mesothelioma undergoing palliative treatment. A total of 20 patients in this study had VATS intervention. Seventeen (34%) had VATS subtotal parietal pleurectomy while three patients had VATS parietal and visceral decortication. Overall, 31 patients had parietal/visceral decortication by thoracotomy. Overall survival was 89% at 6 weeks, 71% at 3 months, 56% at 6 months and 31% at 12 months. The type of procedure did not significantly influence survival. This study concluded that debulking surgery is beneficial in palliation of unresectable malignant mesothelioma. It should be reserved for epithelial cell type before significant loss of weight in whom it provided for better survival and symptom control.

Grossebner et al. [5] did a prospective study on 25 patients who were referred for histological diagnosis by VATS. Malignant mesothelioma was confirmed in 23 of them. These also had drainage of effusion, cytoreductive pleurectomy and lung mobilisation by VATS. Fifteen patients could achieve closure of the pleural space of which 11 patients were alive at 1–2 years. One-year survival in this group was thus 73.3%. Pleural space could not be closed in six patients. Of this group, five patients died in 5–6 months and one patient survived nine months. Thus the survival at six months in this group was only 16.6%. They concluded that VATS was useful in terms of providing adequate tissue for a histological diagnosis and also therapeutic intervention. Further, that there were fewer hospital readmissions and better quality of life when the pleural space could be closed. However, the incidence of postoperative air leaks in this group was greater and led to a longer hospital stay initially.

Waller et al. [6] studied 19 patients with malignant pleural effusion. Thirteen of these had malignant mesothelioma, six had metastatic adenocarcinoma. These underwent parietal pleurectomy by VATS. Median postoperative stay was 5 days (range 2–20 days). At a median follow-up of 12 months, six patients had died of underlying disease (median of 4 months, range 2–8 months) – 2 of these had mesothelioma. Tumour seeding at the port site developed in five patients, all of whom had mesothelioma and two of which had died. They concluded that VATS parietal pleurectomy was a safe and effective palliative measure if the visceral pleura was not heavily involved and the lung was not entrapped. This study did not give separate mortality/survival statistics for mesothelioma compared to other causes of malignant pleural effusion.

All these papers are prospective cohort studies, level 2b and there have been no randomised controlled trials. Also, the form in which the data has been presented in the various papers is not uniform and hence it is not possible to draw a definitive conclusion.

7. Clinical bottom line

The number of patients having VATS for mesothelioma in these few studies is small. However, most of the studies have concluded that VATS decortication is useful as a palliative measure in advanced malignant mesothelioma. VATS provides a diagnostic tool, yielding tissue for histological diagnosis. Secondly, drainage of effusion and pleurectomy/decortication improves the quality of life and may increase survival as well.

References