Chronic Pulmonary Thromboendarterectomy

Medical Policy

Section
Surgery

Original Policy Date
12:2013

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Issue
12:2013

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Description

Chronic obstruction of the large pulmonary arteries by persistent (> 6 months) emboli is a potentially treatable cause of pulmonary hypertension and right-sided heart failure. Fibrotic masses in major pulmonary arteries may result when pulmonary thrombi fail to resolve normally, ultimately leading to pulmonary hypertension. Other factors such as age of the embolus or defects in the fibrinolytic system may also be important. In many cases there is no documented history of embolization. Early diagnosis is difficult since the patients are rarely symptomatic until the development of pulmonary hypertension and right-sided heart failure. Even then diagnosis can be difficult and depends on a high index of suspicion, ventilation/perfusion scans, and careful and experienced interpretation of pulmonary angiograms.

Over the last 2 decades, Moser and colleagues at the University of California at San Diego (UCSD) have developed a technique for surgical removal of the obstructing thromboemboli, as a curative alternative to lung transplantation. The surgery involves cardiopulmonary bypass, and since the obstruction is typically bilateral, the surgical approach requires a median sternotomy. Removal of the organized thrombus requires meticulous dissection in a bloodless field, which in turn requires profound hypothermia with periods of cardiac arrest. In addition, a vena cava filter is usually placed to prevent recurrence of emboli (CPT code 75940).

Policy

Pulmonary thromboendarterectomy of chronic thromboembolic obstruction due to fibroed pulmonary emboli involving the pulmonary arteries may be considered medically necessary.

Typical patient selection criteria for this procedure include New York Heart Association Class III or IV, a mean pulmonary artery pressure above 30 mm Hg, or a pulmonary vascular resistance of greater than 300 dynes/sec/cm².

Policy Guidelines
CPT code 33910 may be used for this procedure. This code, defined as pulmonary artery embolectomy with cardiopulmonary bypass, is also used to describe acute pulmonary embolectomy, which is typically a surgical emergency.

Rationale

In 1993 Jamieson and colleagues published the results of pulmonary thromboendarterectomy in 150 cases performed by one surgeon. (1) A total of 13 patients died for an overall in-hospital mortality of 8.7%. Immediate declines in the hemodynamic measures of surviving patients were highly significant: the mean pulmonary artery pressure dropped from 48.5 to 28.9 mm Hg and the pulmonary vascular resistance dropped from 936 to 299.4 dynes/sec/cm². Of 150 patients who returned for repeat hemodynamic testing from 6 to 24 months after the surgery, hemodynamic improvement remained stable in 47. (2) One year after surgery, New York Heart Association (NYHA) classifications were recorded for 117 patients of the total 150. Preoperatively, the distributions for Class I through IV were as follows: 0, 5, 49, and 63. One year after surgery the distribution was 85, 26, 6, and 0. Therefore, preoperatively 95% of the patients were NYHA Class III or IV, whereas postoperatively 95% of patients were in NYHA Class I or II.

The bulk of the literature comes from physicians at the University of California at San Diego (UCSD). These physicians emphasize the importance of the learning curve of this challenging surgery, and the importance of having a dedicated staff. Therefore patients should be aware of the institutional experience with this surgery.

2003 Update

A literature search was performed on the MEDLINE database for the period of 1998 through June 2003. No literature was identified that would prompt reconsideration of this policy; therefore the policy statement is unchanged. The reported literature continues to report favorable results, although the literature continues to be primarily authored by physicians from UCSD. (3-5)

References:


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<th>Codes</th>
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<td>33910–33915</td>
<td>Pulmonary artery embolectomy; with or without cardiopulmonary bypass, code range</td>
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<td>33916</td>
<td>Pulmonary endarterectomy, with or without embolectomy, with cardiopulmonary bypass</td>
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<td>75940</td>
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<td>Endarterectomy of thoracic vessels</td>
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