Economic Implications of Diagnostic Strategies for CSF Rhinorrhea

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**Background**

Diagnostic and localizing strategies for cases of cerebrospinal fluid (CSF) rhinorrhea vary widely. Recent reviews have established sensitivities and specificities for diagnostic modalities. To date, no study has investigated the implication of modalities. To date, no study has investigated the established sensitivities and specificities for diagnostic fluid

**Methods**

A decision tree analysis of diagnostic algorithms for CSF rhinorrhea localization was performed. The primary outcome measured was cost, with estimated study costs from the Centers for Medicare and Medicaid. The model was parameterized using the best available current literature; a systematic review was performed of studies published from 1990 to 2017 to estimate the sensitivity, specificity, and accuracy of four localization modalities for CSF rhinorrhea. One-way sensitivity analyses were performed via TreeAge Pro software.

**Results**

The use of High-Resolution Computed Tomography (HRCT) followed by exploration in the operating room if preliminary HRCT was negative was found to be the least costly means of diagnosing and localizing a patient with a high index of suspicion for CSF leak (expected cost $1579). The next least costly algorithm was CT-Cisternogram (CTC) followed by visualization in the operating room (expected cost $1897). Sensitivity analyses generally supported HRCT to be the optimal strategy over a wide range of parameter values.

**Conclusion**

Our model suggests primary use of HRCT for localization is the lowest cost approach to localize CSF leaks in patients with confirmed CSF rhinorrhea. These results differ from previously published algorithms with respect to CTC. Considering the additional risks and discomfort associated with intrathecal contrast and lumbar puncture, we recommend HRCT as the first line to localize an assist in treating CSF rhinorrhea.

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**References**