A practice pathway for the initial diagnostic evaluation of isolated sixth cranial nerve palsies


Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Constructing a practice pathway for the evaluation and management of sixth-nerve palsies (SNPs).

Type of intervention
Diagnosis and treatment (devising management pathway).

Economic study type
Cost-effectiveness analysis.

Study population
Patients with SNP.

Setting
Hospital (tertiary care). The economic study was carried out in the USA.

Dates to which data relate
The exact time interval to which the effectiveness and resource use data related was not given (it was reported only that the data collection covered a period of over 30 years). Fiscal year was 1996.

Source of effectiveness data
Effectiveness data were derived from a single study.

Link between effectiveness and cost data
Costing was retrospectively performed on the same patient sample as that used in the effectiveness analysis.

Study sample
Power calculations were not used to determine the sample size. The study sample consisted of 407 patients with the diagnosis of SNP and with a mean age of 49 years.

Study design
This was a retrospective cohort study, carried out in three centres. The duration of the follow-up was 339 weeks on average. No loss to follow-up was reported.

Analysis of effectiveness

The clinical outcome measures used were the percentage of patients undergoing computed tomography (CT) scans and magnetic resonance imaging (MRI) of the head, the classification of the SNP cases as non-isolated or isolated, which in turn was classified as traumatic, congenital, vasculopathic, nonvasculopathic, and progressive or unresolved SNP. The presence of any intracranial lesion according to the imaging studies performed and the development of any neurologic disease in the follow-up period were among the other clinical outcomes reported in the study. It was reported that the patients from the 3 study centres were comparable in terms of age.

Effectiveness results
The percentage of patients undergoing CT scan of the head was 24%, 62% did not undergo a CT scan, and 9% had adequate information regarding CT scans. The corresponding figures for MRI imaging of the head were 52%, 39%, and 9%. 20% of patients were classified as non-isolated, 78% as isolated, and 2% were not classified. 15.5% of patients with isolated SNP were classified as traumatic, 1.6% as congenital, 50% as vasculopathic, 20% as nonvasculopathic, and 13% as progressive or unresolved. The adherence to the proposed practice pathway would have resulted in performing neuroimaging studies for 80 non-isolated, 49 traumatic, 5 congenital, 63 nonvasculopathic, and 42 progressive cases of SNPs. Following the pre-practice pathway procedure resulted in neuroimaging studies being performed in 83% of the non-isolated SNPs, 42% of traumatic cases, 40% of congenital cases, 78% of nonvasculopathic cases, and 67% of progressive cases. The practice pathway developed would have required the 158 patients with vasculopathic not to undergo neuroimaging studies; of these patients, 104 underwent the neuroimaging studies (23 scans and 81 MRIs) according to the pre-practice pathway procedure. No intracranial lesion was identified in the imaging studies performed. There were no cases of development of neurologic disease in the follow-up period for the patients with or without imaging.

Clinical conclusions
Although MRI is generally felt to be more sensitive and specific than CT in the evaluation of cranial neuropathies, there may be a role for CT in certain patient categories, including those with acute trauma, those who require examinations for acute blood derangements, calcifications, or bone disease, or those unable to undergo MRI (e.g. pacemaker wearers, claustrophobic).

Measure of benefits used in the economic analysis
No summary benefit measure was identified in the economic analysis, and only separate clinical outcomes were reported.

Direct costs
Costs were not discounted. Quantities of imaging studies were reported separately. The cost analysis covered only the pre-referral costs, which were compared with the hypothetical cost of the practice pathway. The average costs for neuroimaging in the study centres were used to estimate the associated costs. The perspective adopted in the cost analysis was not explicitly specified. 1996 price data were used. No adjustment for inflation was made. The cost analysis did not cover the costs associated with potentially unnecessary diagnostic evaluations such as physician visits, blood work, and other laboratory studies. The changes in neuroimaging technologies and their associated costs over the 30-year time frame of the study were not taken into consideration.

Indirect Costs
Not considered.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was conducted.

**Estimated benefits used in the economic analysis**
Not applicable.

**Cost results**
It was estimated that the application of the proposed practice pathway would have saved about $100,000 in the cost of neuroimaging studies for the study population of 407 patients considered in this study.

**Synthesis of costs and benefits**
Costs and benefits were not combined.

**Authors’ conclusions**
The authors believed that the recommendations of this practice pathway for the evaluation of SNPs are supported by the authors’ retrospective case series and the literature. Even in this relatively small study, $100,000 in medical resources could have been saved.

**CRD COMMENTARY - Selection of comparators**
The reason for the choice of the comparator is clear. Current practice was compared to a new pathway for the initial diagnostic evaluation of isolated SCN palsies. You, as a database user, should consider whether this applies to your own setting.

**Validity of estimate of measure of benefit**
The internal validity of the study result cannot reasonably be guaranteed due to the retrospective nature of the study, lack of an independent reviewer to confirm each individual patient classification, and the fact that, as the authors acknowledged, the change in neuroimaging technologies over the 30-year time frame of the study was not taken into account. The study may be regarded as a cost-consequences analysis.

**Validity of estimate of costs**
Quantities of resources for the imaging studies were reported separately from the costs. Insufficient details of method of cost estimation were given. The study lacked a prospective cost analysis, as acknowledged by the authors.

**Other issues**
Given the retrospective nature of the study, lack of sensitivity analysis, comprehensive cost analysis, and statistical analysis of the costs, the result should be regarded with some caution. The issue of generalisability to other settings or countries was not addressed.

**Implications of the study**
The authors suggested that “a prospective study with a matched control group is needed to demonstrate regional and specialty-specific variations in care and to strengthen the clinical certainty of the pathway recommendations”.

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