HTAi Abstract

Cost-Effectiveness of PET-CT Versus Adrenal Vein Sampling for the Diagnosis of Hypertension Caused by Primary Aldosteronism

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Objectives

Primary aldosteronism (PA) is caused by a benign adrenal gland tumour and leads to the development of hypertension (high blood pressure). PA is the cause of 11% of all hypertension cases. It can be cured by surgical removal of the affected gland (if unilateral), but is not always diagnosed as the current technique (adrenal vein sampling [AVS]) has a high failure rate and is unpleasant for patients. The aim was to compare the cost-effectiveness of PET-CT with AVS for the identification of PA patients suitable for surgery.

Methods

A discrete event simulation was developed. Anonymised individual patient data from Addenbrooke's hospital (Cambridge, UK) were used to inform the patient characteristics of those screened. Sensitivity and specificity of the diagnostics were taken from the literature and the outcomes of surgery on hypertension were modelled. The model captured the impact of hypertension on the risk of cardiovascular events and death. The model used a UK NHS perspective, a lifetime time horizon and a 3.5% annual discount rate. NHS reference costs were used and utilities were taken from the literature.

Results

PET-CT resulted in 0.04 additional QALYs (11.340 vs 11.299 for PET-CT vs AVS, respectively) and £64.43 fewer costs (£8,571.93 vs £8,636.36 for PET-CT vs AVS, respectively), meaning that PET-CT dominated AVS. PET-CT remained dominant across the majority of one-way sensitivity analyses, with positive ICERs under £10,000/QALY only for the upper bound of PET-CT cost (£6,997/QALY), upper bound of cost of laparoscopic adrenalectomy (£246/QALY) and lower bound of AVS cost (£7,702/QALY).

Conclusions

Despite being a more costly procedure, PET-CT was overall a cost saving alternative to AVS for the diagnosis of unilateral PA, due to the greater number of successful surgeries and hence better long-term outcomes. This could change the way that PA is diagnosed in clinical practice, providing a less traumatic method for patients. The main limitation of the model is that probabilistic sensitivity analysis could not be run due to computational time required.

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