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IS COST THE ACHILLES HEEL OF POSTERIOR TIBIAL NERVE STIMULATION? A COST MINIMISATION COMPARISON WITH ANTIMUSCARINIC THERAPY IN THE MANAGEMENT OF OAB.

Hypothesis / aims of study

Overactive Bladder (OAB) syndrome, defined as 'urgency with or without urge incontinence, usually with frequency and nocturia' (1), is a prevalent condition known to adversely affect quality of life (QoL). Whilst antimuscarinic therapy remains integral in the management of OAB, compliance and persistence may be affected by antimuscarinic side effects such as dry mouth and constipation. For those patients unable to tolerate antimuscarinic therapy, or who have intractable symptoms, Posterior Tibial Nerve Stimulation (PTNS) has been shown to offer an efficacious and well tolerated alternative treatment approach (2). A recent study has also demonstrated that PTNS has similar efficacy to tolterodine ER 4mg od in the treatment of OAB although may be associated with fewer adverse effects (3). The aim of this study was to perform a cost minimisation analysis, based on equal efficacy, of PTNS and tolterodine ER in the management of OAB.

Study design, materials and methods

A cost minimisation model was developed in order to compare the cost-utility of PTNS and tolterodine ER 4mg od in the management of OAB patients. The cost comparison was based on both a one and two year follow-up period from the perspective of the NHS. Equal efficacy for the two treatments was assumed based on the available evidence in terms of urinary symptoms and QoL (3). During the development of the model it was assumed that both arms would have an initial consultation and similar investigations and this was not included in the cost analysis. Equally adverse effects for each treatment were considered to be cost neutral and therefore not included in the model. In addition there were no specific assumptions made regarding compliance and this was assumed to be comparable.

For the PTNS model the cost of treatment was estimated using standard NHS sources for equipment and disposables (Urgent PC, Uroplasty) whilst the lifespan of the device was estimated to be 5 years. This allowed calculation of the annual equivalent cost (amortisation) and an estimate of equipment cost per use. The treatment algorithm was comprised of 12 weekly visits over an initial three month period and subsequent maintenance therapy of one treatment session per month. It was assumed that 50 patients would be treated per year, each visit would last 30 minutes, and staff costing was based on a specialist nurse salary.

For the antimuscarinic model drug costs were estimated using the national NHS prescriptions tariff (BNF 57, March 2009) for tolterodine ER 4mg od. Subsequent follow up visits were assumed to be three monthly in the first year and six monthly in the second and were priced using the NHS tariff.

Results

A cost minimisation model was developed and the input values are shown below **[Table 1]**.

PTNS	Value	Range	Tolterodine	Value	Range
Equipment Cost	£960.00	£700-£1200	Daily drug cost	£1.04	£0.50-£2.50
Life-span	5	1-5	OPD Cost	£79.00	£50-£150
Patients per annum	50	50-200	OPD Visits Yr1	4	1-7
Disposable lead	£37.00	£20-£50	OPD Visits Yr2	2	1-4
Hourly nursing cost	£43.00	£20-£60			
Initial Treatments	12	6-20			
Maintenance Yr1	9	5-15			
Maintenance Yr2	12	6-18			
Duration of visit (hrs)	0.5	0.2-1.0			
NHS Discount Rate	3.5%	1.0%-6.0%			

Table 1: Model inputs for cost minimisation comparison for PTNS and Tolterodine

The model was designed to allow input variables to be changed dependent on costs and medical care models used. Using the standard model cost minimisation comparison at 1 year found antimuscarinic therapy to be cheaper than PTNS (£696.00 and £1324.00 respectively; difference - £628.00) **[Figure 1]**. However when considering the results over 2 years the difference in cost between the two treatments is slightly reduced (£2055.00 and £1215.00 respectively; difference - £840.00) **[Figure 2]** reflecting the lower costs associated with maintenance therapy rather than the initial treatment. Consequently over 1 year PTNS treatment is 47.4% more expensive than antimuscarinic therapy whilst over 2 years this is reduced to 40.9%.

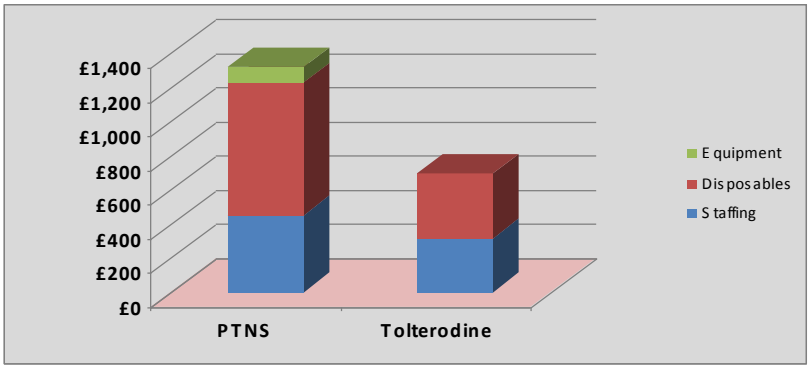

Figure 1: Cost Minimisation Comparison at 1 year

The majority of cost in the PTNS model is composed of staffing and disposable costs. Consequently reducing the frequency of maintenance visits to six weekly lowers the costs for PTNS over the 2 year model to £1622.00 although this may have an effect on efficacy. Alternatively a 50% reduction in the price of consumables would reduce the cost of PTNS to £1501.00 making it 19.1% more expensive than antimuscarinic therapy.

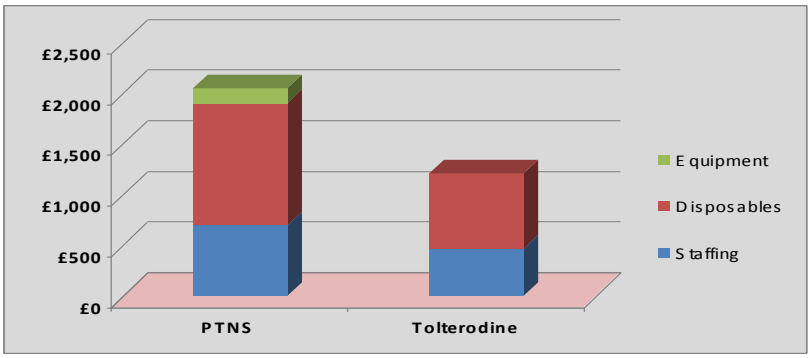

Figure 2: Cost Minimisation Comparison at 2 years

Equally the antimuscarinic model is very sensitive to changes in the cost of medication. A 50% increase in drug tariff would increase overall antimuscarinic costs to £1588.00 over two years – 19.8% cheaper than PTNS. Conversely a reduction in cost of medication by 50% (such as using generic medication) would mean drug treatment was 57.5% cheaper.

Interpretation of results

The evidence from this cost minimisation analysis would suggest that antimuscarinic therapy remains cheaper than PTNS in women with OAB. However there is a trend to reduced costs in the PTNS arm over time as the initial outlay for equipment is offset suggesting that therapy may become more cost effective in the longer term. The model is also sensitive to change and allows modelling to be tailored to different clinical situations. Clearly reducing the cost of medication, by using a generic preparation, has a significant effect on price comparisons and will further reduce the relative cost of the antimuscarinic model. Limitations in this analysis include the fact that no assumptions were made regarding adverse effects which may be reduced in the PTNS group and this may affect both QoL and persistence and compliance.

Concluding message

Based on this cost minimisation analysis PTNS would appear to be more expensive than antimuscarinic therapy and should be reserved as a second line therapy for those patients who are unable to tolerate antimuscarinic therapy or who have intractable OAB symptoms prior to considering sacral neuromodulation.

References

1. Neurourol Urodynam 2002; 21: 167-178
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3. Poster presentation. Meeting of AUA, Orlando, Florida. USA. 2008

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What were the subjects in the study?	**NONE**