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5 YEAR COST ANALYSIS OF INTRA-DETRUSOR INJECTION OF BOTULINUM TOXIN TYPE A AND AUGMENTATION CYSTOPLASTY FOR REFRACTORY NEUROGENIC DETRUSOR OVERACTIVITY.

Hypothesis / aims of study
The treatment options for oral antimuscarinic refractory patients with neurogenic (NGB) detrusor overactivity (DO) are intradetrusor injections of Botulinum Toxin Type A (BoNTA) and augmentation cystoplasty (AC). Since introduction in 2000, repeat BoNTA injections have been found to be safe, effective and durable for depressed, but adequate bladder compliance to achieve a low pressure capacity once DO is suppressed. The price of the toxin and inherent repetitive administration of BoNTA may have formidable cost implications. Long-term management requires understanding of the cost differential between these options. We estimated the average initial treatment costs and cumulative 5 year costs of BoNTA injections and AC for antimuscarinic refractory patients.

Study design, materials and methods
A complete survey of peer reviewed literature provided the percentages of outcomes and complications. Procedure and surgical costs were derived from the Medipac database of the hospital billing system using Current Procedural Terminology (CPT) codes. Hospital center costs were determined from Diagnosis Related Group (DRG) reimbursement files. Drug costs were calculated using Center for Medicare and Medicaid Services (CMS) Average Selling Price. All costs were reported in 2008-2009 US dollars. Model building and one-way sensitivity analysis was performed to evaluate assumptions and uncertainties using the Treeage Pro 2009 software based on variations in parameter estimates.

Results
The initial treatment costs were $25042 and $2,947 for AC and BoNTA, respectively. Long-term costs were calculated based on success, failure, and complications of BoNTA and AC. The average cumulative 5 year cost by intervention was $33,272 and $28,065 for AC and BoNTA (bi-annual injections), respectively.

Interpretation of results
One way sensitivity analysis revealed that BoNTA injections persisted as the less costly treatment option. If the durability of BoNTA injections is less than a mean of 5.1, the model favors AC. The model is sensitive to facility and surgeons costs of BoNTA injections and facility cost of AC. If the complication rate for AC drops below 14% (set at 40% for medical and surgical complications), AC is favored.

Concluding message
This is the first cost-effectiveness comparison of surgical treatment options for refractory NGB DO. Management has important long-term quality of life and clinical ramifications. AC has been used for decades as an effective surgical option for NGB patients who cannot be managed conservatively (i.e. non-compliance, poor bladder compliance or compromised upper tracts). BoNTA is used as the most current therapy in many centers due to its safety, reproducibility and ease of administration. We show BoNTA as the more cost effective choice over a five-year period in the treatment of NGB patients.

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