Collaborative Review – Bladder Cancer

Hexyl Aminolevulinate–Guided Fluorescence Cystoscopy in the Diagnosis and Follow-up of Patients with Non–Muscle-invasive Bladder Cancer: A Critical Review of the Current Literature


a Department of Urology, University Medical Centre Hamburg-Eppendorf, Hamburg, Germany; b Department of Urology, Hospital Motol, 2nd Faculty of Medicine, Charles University, Prague, Czech Republic; c Institute for Cancer Studies and Academic Urology Unit, University of Sheffield, Sheffield, United Kingdom; d Department of Urology, CHUV-University Hospital, Lausanne, Switzerland; e Department of Urology, Medical University of Vienna, Vienna, Austria; f Department of Urology, University Hospital Tübingen, Tübingen, Germany; g LIFE-Centre, Laser-Forschungslabor, University Hospital of Munich, Munich, Germany; h Department of Urology, Hospital Traunstein, Traunstein, Germany; i Department of Urology, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands

Abstract

Context: Controversy exists regarding the therapeutic benefit and cost effectiveness of photodynamic diagnosis (PDD) with 5-aminolevulinic acid (5-ALA) or hexyl aminolevulinate (HAL) in addition to white-light cystoscopy (WLC) in the management of non–muscle-invasive bladder cancer (NMIBC).

Objective: To systematically evaluate evidence regarding the therapeutic benefits and economic considerations of PDD in NMIBC detection and treatment.

Evidence acquisition: We performed a critical review of PubMed/Medline, Embase, and the Cochrane Library in October 2012 according to the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) statement. Identified reports were reviewed according to the Consolidated Standards of Reporting Trials (CONSORT) and Standards for the Reporting of Diagnostic Accuracy Studies (STARD) criteria. Forty-four publications were selected for inclusion in this analysis.

Evidence synthesis: Included reports used 5-ALA (in 26 studies), HAL (15 studies), or both (three studies) as photosensitising agents. PDD increased the detection of both papillary tumours (by 7–29%) and flat carcinoma in situ (CIS; by 25–30%) and reduced the rate of residual tumours after transurethral resection of bladder tumour (TURBT; by an average of 20%) compared to WLC alone. Superior recurrence-free survival (RFS) rates and prolonged RFS intervals were reported for PDD, compared to WLC in most studies. PDD did not appear to reduce disease progression. Our findings are limited by tumour heterogeneity and a lack of NMIBC risk stratification in many reports or adjustment for intravesical therapy use in most studies. Although cost effectiveness has been demonstrated for 5-ALA, it has not been studied for HAL.

Conclusions: Moderately strong evidence exists that PDD improves tumour detection and reduces residual disease after TURBT compared with WLC. This has been shown to improve RFS but not progression to more advanced disease. Further work to evaluate cost effectiveness of PDD is required.

Patient summary: In this paper, we review recent advances in blue-light fluorescence cystoscopy, which is used to help find and treat bladder cancer. We found good evidence to suggest fluorescence cystoscopy improves the diagnosis and complete treatment of bladder cancers. The economic benefits are less clear.

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