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EPIDEMIOLOGY, DIAGNOSIS, PROGNOSIS AND MANAGEMENT OF BLADDER TUMOUR IN NEURO-UROLOGICAL PATIENTS: A SYSTEMATIC REVIEW OF THE LITERATURE

Hypothesis / aims of study
To elaborate a systematic review of the literature and a meta-analysis on the epidemiology, diagnosis, management and prognosis of bladder cancer in neuro-urological patients.

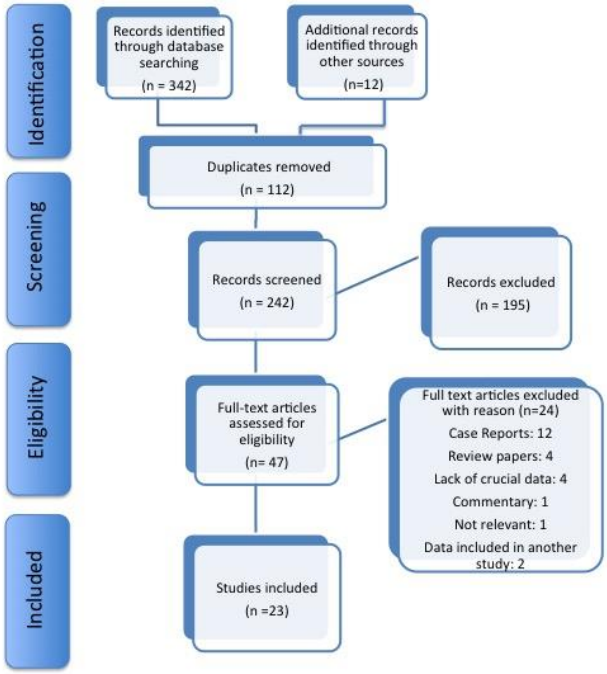
Study design, materials and methods
A systematic review of the literature was performed using PubMed and Scopus, according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Statement (PRISMA), to identify all articles published up to February 2016. Medical subject heading (MeSH) terms used were the following: “neurogenic bladder”, “neurogenic detrusor overactivity”, “spina bifida”, “multiple sclerosis” and “spinal cord injury”. Each of these key words was crossed with “bladder cancer”. We additionally searched the reference lists of all included studies and relevant review articles. All articles published in French or English were searched. Studies on bladder augmentation, case reports, commentaries, non-systematic review papers, studies not published as full-text and those not discriminating between non-neurological and neurological patients were excluded. The following variables were assessed: prevalence, neurological disorder, risk factors, clinical presentation, bladder drainage method, histological types of cancer, management, prognosis, mean/median follow-up and survival times, cancer-free survival, overall survival, cancer-specific mortality, other cause mortality and overall mortality. A list of the four most important potential confounders was identified: neurological disorder, gender, tumour stage and type of treatment.

Results
After screening 242 articles, 23 studies (19 retrospective and 4 prospective) enrolling 547 patients were included (Figure 1). Patients suffered from spinal cord injury (n=525/544; 96.5%), spina bifida (n=9/544; 1.7%), multiple sclerosis (n=9/544; 1.7%) and familial paraplegia (n=1/544; 0.2%). Bladder cancer was reported in 2.2% of neuro-urological patients. Mean age at diagnosis was 54.8 years (range 46.5-60.3). Bladder cancer occurred after a mean period of evolution of the neurological disorder of 25.7 years (range 17.6-41.0). Gross haematuria was the most predominant clinical presentation, being reported in 61.6% of cases. Indwelling urethral or supra-pubic catheters was used in 67.3% of patients. The most frequent histological subtype of bladder cancer was transitional cell carcinoma (44.5%), followed by squamous cell carcinoma (SCC) (41.2%). Muscle invasive bladder cancer was reported in 73.9% of patients. The majority of patients were treated by endoscopic resection followed by cystectomy (63.7%). The mean follow-up time was of 35.6 months (range 3.0-98.4) and the mean survival time was of 30.0 months (range 20.0-40.0). The mean cancer-free survival, cancer-specific mortality and overall mortality rates were of 13.1%, 49.6% and 69.1% respectively. Only two studies considered potential confounders.

Interpretation of results
We present the first systematic review of the literature on bladder cancer among neuro-urological patients. The overall bladder cancer prevalence in our study population was of 2.2%, which is consistent with the rates that Welk et al.[1] reported in spinal cord injury patients (0.1-10%). As previously reported, the rate of bladder SCC in neuro-urological patients is higher than in the general population. The rate of muscle invasive bladder cancer is high and the mortality is of 49.6%.

Concluding message
The prevalence and prognosis of bladder cancer in neuro-urological patients highlights the importance of a long-term follow-up in this population. The necessity of further studies in this field is crucial.

Figure 1 : Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram



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