Relationship Between the Use of Diuretics and Overactive Bladder in Patients with Heart Failure

Kalp Yetmezliği Hastalarında Aşırı Aktif Mesane ile Diüretik Kullanımı Arasındaki İlişki

Aşırı Aktif Mesane ile Diüretik İlişkisi / Relation Between Diuretics and Overactive Bladder

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Özet

Amaç: Bu çalışmanın amacı ayaktan kalp yetmezliği hastalarında aşırı aktif mesane (AAM) prevalansını saptamak ve AAM ile ilişkili olabilecek klinik ve laboratuvar parametrelerini değerlendirmektir. Gereç ve Yöntem: Çalışma 84 kalp yetmezliği hastasını (59 erkek, 25 kadın; ortalama yaş 62.3 ± 10.8 yıl) içermektedir. AAM sendromu, OAB-validated 8-question awareness tool (OAB-V8) 'a gore belirlendi ve medikal kayıtlardan demografik değişkenlerle ilgili kayıtlar elde edildi. Hastalar, AAM semptomları olanlar (grup I) ve olmayanlar (grup II) olmak üzere iki gruba ayrıldı. AAM ile ilişkili olabilecek klinik parametreler iki grup arasında karşılaştırıldı. Bulgular: Kırküç hastanın (% 51.2) AAM sendromu varken (grup I), 41 hastada (% 48.8) AAM sendromu bulunmamaktaydı (grup II). Sadece kombine diüretik kullanım sıklığı (aldosteron antagonisti ve loop diüretiği) grup 1' de belirgin olarak fazlaydı (% 27.4' e karşılık % 14.3; p=0.021). Diğer klinik ve laboratuvar bulguları iki grup arasında benzerdi. Tartışma: Mevcut çalışma göstermiştir ki, AAM, kalp yetmezliği hastalarında yaygın görülmektedir ve kombine diüretik kullanımı ile ilişkilidir.

Anahtar Kelimeler

Aşırı Aktif Mesane; Diüretik; Kalp Yetmezliği

Abstract

Aim: The objective of this study was to determine the prevalence of overactive bladder (OAB) in outpatient heart failure patients and to evaluate the clinical and laboratory parameters that may be associated with OAB. Material and Method: The study included 84 patients (59 males, 25 females; mean age 62.3 ± 10.8 years) who admitted as heart failure patients. OAB syndrome was determined according to OAB-validated 8-question awareness tool (OAB-V8) scores and data on demographic variables were collected from medical record. The patients were divided into two groups depending on the presence (group I) or absence (group II) of OAB symptoms. The clinical parameters potentially related with OAB were compared between the two groups. Results: There were forty-three patients (51.2 %) with OAB (group I) and 41 patients (48.8 %) without OAB (group II). Only the frequency of combined diuretics usage (aldosterone antagonist and loop diuretics) was significantly higher (27.4% vs. 14.3%; p=0.021) in group I. Other clinical and laboratory findings were similar between the groups. Discussion: The current study demonstrated that OAB was a common syndrome in patients with heart failure and it was associated with combined use of diuretics.

Keywords

Overactive Bladder; Diuretic; Heart Failure

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Introduction

Overactive bladder (OAB) syndrome is characterized by urinary urgency with or without urge incontinence, usually with frequency and nocturia [1]. OAB can influence anyone at any time of life, but the prevalence tends to increase with advancing age [2]. The prevalence of OAB is approximately 10% to 20% in elderly populations [3,4].

It has been defined that several risk factors are associated with OAB, such as increased age, diabetes mellitus, heart failure, depression and increased BMI [5,6]. Diuretic use is also common among heart failure patients. By increasing urine production by the kidneys, diuretics increase urinary frequency and may cause urinary urgency and incontinence [7]. However, whether diuretic use is associated with OAB has not been well studied and there are contradictory publications in this issue [5,7].

The objective of this study was to determine the prevalence of OAB in outpatient heart failure patients and to evaluate the clinical and laboratory parameters that may be associated with OAB.

Material and Method

A total of 84 New York Heart Association (NYHA) heart failure classes I and II outpatient patients (59 males, 25 females; mean age 62.3 ± 10.8 years) were enrolled in this study at our institution between September 2010 and February 2011. The study protocol was approved by the local ethics committee, and all patients were informed about the study protocol, and informed consent was obtained from each participant. Patients with severe heart failure (NYHA class III and IV), hemodynamic instability and treated with intravenous diuretics were excluded. Also patients with urinary tract infection and bladder cancer that may mimic symptoms similar to those seen with OAB were excluded from this study.

Medical records were reviewed for demographic parameters, concomitant diseases, medications used, echocardiographic parameters, documentation of NYHA classification of heart failure. The types of diuretics used were also classified as none, only loop ones, only aldosterone antagonist, and combined loop and aldosterone antagonist ones.

The OAB-validated 8-question awareness tool (OAB-V8) scores were collected by self-administered questionnaires. The OAB-V8 is a questionnaire designed for patients to determine the presence of OAB symptoms and how much the symptoms disturb the patients. This included eight questions regarding the symptoms of overactive bladder such as urinary frequency, nocturia, urgency and urge incontinence in order to assess the patients' symptoms [8]. Patients respond on a 6-point Likert scale ranging from 0 (not at all) to 5 (a very great deal), with a maximum possible score of 40.

Overactive bladder was determined according to OAB-V8 and the patients were divided into two groups depending on the presence (group I) or absence (group II) of OAB symptoms. The clinical parameters potentially related with OAB were compared between the two groups.

Statistical analysis

All statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS 15.0; SPSS Inc., Chicago, IL). Continuous variables were expressed as mean ± standard deviation. The Student's t-test was used to compare con-tinuous variables, and the chi-square test was performed to compare categorical variables between the groups. A p value of less than 0.05 was considered significant.

Results

There were fourty-three patients (51.2 %) with OAB (group I) and 41 patients (48.8 %) without OAB (Group 2). Baseline patient characteristics of the two groups are summarized in Table 1. The percentage of patients using no diuretics was tend to be higher in group 2, but not reached statistical significance. Only combined use of diuretics was significantly different between the groups (Table 1). Other clinical and laboratory findings were similar (Table 1).

Table 1. Comparison of patients' baseline characteristics, according to the presence of overactive bladder

	TOTAL (n=84)	OAB (+) (n=43)	OAB (-) (n=41)	p
Age (years)	62.3 ± 10.8	63.3 ± 9.2	61.2 ± 12.2	>0.05
Female, n (%)	25 (29.8)	14 (16.7)	11 (13.1)	>0.05
Male, n (%)	59 (70.2)	29 (34.5)	30 (35.7)	>0.05
Hypertension, n (%)	45 (53.6)	26 (31.0)	19 (22.6)	>0.05
Diabetes mellitus, n (%)	31 (36.9)	18 (21.4)	13 (15.5)	>0.05
Coronary artery disease, n (%)	62 (73.8)	33 (39.3)	29 (34.5)	>0.05
LVEF (%)	29.7 ± 4.8	30.0 ± 4.7	29.3 ± 4.9	>0.05
ACE inhibitors or ARB, %	65 (77.4)	35 (41.7)	30 (35.7)	>0.05
Beta blockers, %	63 (75.0)	32 (38.1)	31 (36.9)	>0.05
Only loop diuretics, n (%)	15 (17.9)	8 (9.6)	7 (8.3)	>0.05
Only aldosterone antagonist, n (%)	16 (19.0)	7 (8.3)	9 (10.7)	>0.05
Combined diuretic, n (%)	35 (41.7)	23 (27.4)	12 (14.3)	0.021
No diuretic, n (%)	18 (21.4)	6 (7.1)	12 (14.3)	>0.05

LVEF: Left ventricular ejection fraction, ACE: angiotensin converting enzyme, ARB: angiotensin receptor blocker, OAB: Overactive bladder

Discussion

The current study demonstrated that OAB was a common syndrome in patients with heart failure and it was associated with combined use of diuretics.

OAB is a symptomatic diagnosis and comprises urgency, with or without urge urinary incontinence, usually with frequency and nocturia in the absence of other pathologies [9].

There are several risk factors that are associated with OAB, such as increased age, heart failure, diabetes mellitus and increased BMI [5,6]. Heart failure patients with evidence of volume overload or a history of fluid retention should be treated with a loop diuretic to relieve their symptoms. Also unless contraindicated or not tolerated, the addition of a low-dose of an aldosterone antagonist should be considered in all patients with a left ventricular ejection fraction (LVEF) < 35%. Aldosterone antagonists increase survival when added to existing therapy [10]. Therefore, combined diuretic use is common among heart failure patients.

It has been estimated that OAB affects 10% to 20% of the US and European populations [3,8,12]. However, in heart failure populations this prevalence reaches to approximately 57% [5].

Likewise, the prevalence of OAB was 51.2% in our study patients. This discrepancy may result from the study populations and the medications used.

Studies which evaluated diuretic use and symptoms of overactive bladder are quite rare.

Fitzgerald et al. [11] found that nocturia was higher in patients with cardiac disease and using diuretics. Ekundayo et al. [7] have studied and found that OAB symptoms were common among older people and were associated especially with loop diuretic use. Palmer et al. [5] did not find any relation between OAB and diuretic use in heart failure patients. In our study we found that OAB was a common syndrome in patients with heart failure and it was associated significantly with combined use of diuretics.

We investigated not only nocturia, but also all the symptoms of OAB. The study was only carried out in patients with heart failure. As different from Palmer et al we divided the use of diuretics into sub-groups. OAB prevalence was different only in patients treated with combined diuretic. These results may be associated with the synergistic effect of combined diuretic use. Clinicians should routinely ask their patients who are on diuretics about the symptoms of OAB and offer treatment when feasible and appropriate.

Its cross-sectional design and relatively small population size are among limitations of the present study. Data on diuretic use and other comorbidity were obtained from chart abstraction. Further prospective studies are needed to establish the possible causal relationships between diuretic usage and OAB in heart failure patients, which is a frequently prescribed drug in daily practice.

Competing interests

The authors declare that they have no competing interests.

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