

NOCTURIA COMMON IN THE ELDERLY

Thomas F. Stringer M.D. F.A.C.S.

Nighttime urinary frequency (nocturia) is a common and bothersome symptom particularly affecting elderly men and women. It can have a significant impact on quality of life. The associated sleep deprivation may lead to psychological and physical illness. Management is dependent on identification of a specific cause.

Nocturia can fall into one of several broad categories that include low nighttime bladder capacity, high nighttime urine production (polyuria) and global polyuria.

Nocturia occurs because nighttime urinary volume exceeds bladder capacity and the patient is awakened by the need to void. Functional bladder capacity is the largest volume voided as recorded in a 24-hour voiding diary assuming complete bladder evacuation.

Some patients have significantly reduced bladder capacity during sleep hours. Low nocturnal bladder capacity is primarily a urologic diagnosis and underlying causes such as bladder outlet obstruction, infection and cancer may require specific evaluation and treatment.

The increased production of urine at night in nocturnal polyuria is offset by lowered daytime urine production so that 24-hour urine volumes are normal.

Nocturnal urine volume is defined as the total urinary output during the hours of sleep including the volume of the first morning void. Nocturnal polyuria is determined if the nocturnal urine volume divided by 24-hour volume is greater than 35%. The most significant reason for Nocturia in the elderly is a mismatch between volume of urine excreted and the bladder's capacity to hold adequate urine volumes during the hours of sleep.

The causes of nocturnal polyuria include congestive heart failure, diabetes mellitus, diabetes insipidus, cerebrovascular accident with disruption of the pituitary axis, third space reabsorption related to venostasis, nephrotic syndrome or hepatic failure and late evening diuretic/fluid intake.

Normally, urine is produced in a circadian pattern that is age dependent. In people under 24, mean nocturnal urine volume is 14%. This is compared to those over the age of 65 where mean nocturnal urine volume is 34%. The circadian pattern appears to be closely related to corresponding increase in secretion of antidiuretic hormone during the hours of sleep. A reversal of this pattern may cause nocturnal polyuria in the elderly.

Sleep apnea is defined as a sudden cessation of respiration due to airway obstruction during sleep. Obstructive sleep apnea is associated with increased kidney excretion of sodium and water resulting in Nocturia as a result of secondary nocturnal polyuria. Treatment includes nasal continuous positive airway pressure during sleep.

Remedial medical causes of nocturnal polyuria should be identified and treated. Empiric treatment options include evening fluid restriction, timed diuretics,

afternoon naps and/or elevation of the legs, application of compressive stockings when appropriate and antidiuretic hormone administration.

In patients who fail other therapies, exogenous administration of antidiuretic treatment may be appropriate. DDAVP is an analogue of the antidiuretic hormone arginine vasopressin and can be administered as a nighttime nasal spray.

Polyuria is defined as a 24-hour urine in excess of 2500 cc. It is related to increased intake so that polyuria and polydipsia (increased fluid consumption) are closely related. Polyuria therefore results in both day and nighttime urinary frequency due to global urine overproduction in excess of bladder capacity.

Causes of polyuria include diabetes mellitus and insipidus and primary thirst disorders. Treatment is directed at reduction of both water intake and its resultant output through specific measures such as tight control of serum glucose levels, restriction of water intake, or supplementary administration of antidiuretics when appropriate.

Nocturia causes distress to a significant part of the elderly population. It is a common reason for persistent sleep deprivation, which in turn can lead to psychological and somatic disease.

Nocturia can be attributed to nocturnal polyuria, diminished nocturnal bladder capacity or a combination of the two. Distinction between these conditions is made by a simple analysis of the 24-hour voiding diary. Primary treatment can then be directed at the principle etiologic component with reduction in nighttime frequency.

September 2006