Ovarian Cystadenoma Mistaken as Postvoid Residual Urine by Portable Ultrasound Scanning

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Residual urine can be erroneously estimated due to cystic pelvic pathology by portable ultrasound scanning. We report a case involving a false-positive elevated postvoid residual urine result using a bladder ultrasound caused by an ovarian cystadenoma unrelated to the urinary tract. (J Korean Continence Soc 2009;13:166-8)

Key words: Ovarian neoplasms, Cystadenoma, Urinary bladder, Ultrasonography

Determination of postvoid residual (PVR) is necessary for the evaluation of lower urinary tract dysfunction. Since sonography has been the standard tool for the assessment of PVR, a portable, automated device (BladderScan) produced measurements of PVR that correlated well with catheterized volumes in most studies [1-4]. However, portable ultrasound is not as specific for urinary retention as it is sensitive, of which false-positive rate was up to 9% even in the most favorable series [4]. This relatively low specificity is maybe because BladderScan does not appear to distinguish between residual urine and their fluid collections in the pelvis and lower abdomen [5]. We report a case involving false-positive elevated PVR results on a bladder ultrasound caused by an ovarian cystadenoma.

Case Report

A 46-year-old woman with no significant past medical history complained of incomplete bladder emptying sensations and increased frequency for 3 months. Physical
examination revealed a palpable mass in the lower abdomen, which was suspected to be a distended bladder. PVR measured by portable bladder scan (BladderScan™, BVI 3000, USA) was 270 ml. Similar results were found using a Bladder ultrasound (Medison™, SONOACE 6000C, Korea) (Fig. 1). Insertion of a urethral Foley catheter was performed, however, the catheterized PVR was zero. Given concerns for a possible cystic pelvic mass, an abdominopelvic CT scan was performed, which revealed a 10.1×8.4×5.1cm sized cystic mass originating from right adnexa, with compressing the bladder (Fig. 2). She was referred to the gynecologic department and subsequently underwent right salpingo-oophorectomy. On pathologic examination, the mass was found to be a right ovarian serous cystadenoma. However, even after the removal of pelvic cyst, the patient's urinary symptoms have not been relieved. She is being followed conservatively while on anticholinergic therapy.

**Discussion**

Incomplete voiding is an important sign of many urologic disorders [4]. PVR can be estimated in several ways. Urinary catheterization has long been thought to be the gold standard in determining PVR. However, urinary catheterization is uncomfortable for patient and carries with it a small possibility of infection or urethral trauma [3]. Ultrasonography has been used to measure bladder volume for the past 40 years [6]. The correlation between ultrason and catheterization for assessment of PVR is very high, therefore, sonography is regarded as the standard tool for PVR measurement [1]. The relative automation and operator independence of the BladderScan has made it widely useful in this clinical setting [2]. Many studies reported that portable ultrasound bladder scanning is quick, easy to use, non-invasive, readily repeatable for determining PVR [2-4]. However, its specificity is relatively low, which may be due to the misidentification by the automated device of pelvic or lower abdominal fluid collections as urine in the bladder [5].

Ovarian cystadenoma can present with abdominal pain, ascites, or as an incidental pelvic mass [7]. Cooperberg reported 3 cases of significant PVR measurements on ultrasound far from the comparatively low catheterized residual urine. In that report, the elevated PVR was proved to be misleading due to cystic ovarian pathology, similar to our patient [5]. Pelvic mass may cause lower urinary tract symptoms, and although not observed in our case, it has been reported that the removal of the mass may bring relief of such symptoms [7].

If there is significant disparity between PVR measured by a BladderScan and that measured by catheterization, diagnostic imaging is required to assess for other cause and pathology in the abdomen and pelvis.

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**Fig. 2.** Abdominopelvic CTscan. A 10.1×8.4×5.1cm sized cystic mass is located in pelvic cavity (A) and compresses the bladder (B).
References