

Advantages by using the intradermal microbubbles for sentinel lymph node detection in penile cancer

Dear Editor,

Penile cancer has a relatively low incidence of 0.6% among all types of neoplasms. These incidents can reach up to 10% in the developing countries [1]. Resection of the primary cancer and early dissection of nodal metastases may improve survival. Nevertheless, inguinal lymphadenectomy may have a negative impact on patient's quality of life due to possible surgical site infection, lymphocyst formation or lymphoedema [2].

Sentinel lymph node (SLN) detection by radiopharmaceuticals, was first applied in penile cancer [3] and is defined as the identification of the first regional lymph node by the primary site of cancer [2]. In the case of penile cancer, the retrieval of a positive node necessitates a complete inguinofemoral nodal dissection including also the deep femoral lymph nodes. The method for identifying SLN has been successfully used in various cancers like vulvar, breast cancers and melanomas [4-7].

The utilization of contrast-enhanced ultrasonography (CEUS) combined with the administration of a contrast medium is used as a routine test for imaging tissue vasculature. This test is using various dispersions with sulfur hexafluoride gas microbubbles (SonoVue, Bracco Imaging). The mean diameter of these microbubbles is 2.5µm, smaller than the red blood cells diameter [8]. The test has been recently applied in UK by the Maidstone group for the detection of SLN, in patients with breast cancer [8].

The sentinel lymph node mapping CEUS technique combined with sulfur hexafluoride gas microbubbles is quite simple to apply and reasonably cost effective. Additionally, both in the blue dye and the radioactive colloid technique, the administered substance may surpass the SLN to the next regional lymph node group giving confusing results [2]. Moreover, this radioactive test the needs to have a specific nuclear medicine department. Furthermore, there is a probability of anaphylactic reactions in 0.9% when injecting the blue dye [9]. Local skin necrosis or/and skin tattooing at the injection site of the blue dye can last up to a year [9]. In contrast to the above, the CEUS technique does not have these side effects, has a shorter time of application (approximately 30min) and causes less discomfort to the patients. Comparative studies using both the radioactive,

the blue dye and the CEUS technique are warranted especially in penile carcinoma.

The authors declare that they have no conflicts of interest

Bibliography

1. Spiess PE, Horenblas S, Pagliaro LC et al. Current concepts in penile cancer. *J Natl Compr Canc Netw* 2013; 11:617-24.
2. Horenblas S. Sentinel lymph node biopsy in penile carcinoma. *Semin Diagn Pathol* 2012; 29:90-5.
3. Cabanas RM. An approach for the treatment of penile carcinoma. *Cancer* 1977; 39:456-66.
4. Longpre MJ, Lange PH, Kwon JS, Black PC. Penile carcinoma: lessons learned from vulvar carcinoma. *J Urol* 2013; 189: 17-24.
5. Jaukovic L, Sijan G, Rajović M et al. Lymphoscintigraphy and sentinel lymph node biopsy, in cutaneous melanoma staging and treatment decisions. *Hell J Nucl Med* 2015; 18: 146-51.
6. Brammen L, Staudenherz A, Polterauer S et al. Sentinel lymph node detection in vulvar cancer patients: A 20 years analysis. *Hell J Nucl Med* 2014; 17: 184-9.
7. Usmani S, Khan HA, abu Huda F et al. Evaluation of the gamma probe guided sentinel lymph node biopsy and the blue dye technique in the management of breast cancer. *Hell J Nucl Med* 2010; 13(1):30-4.
8. Cox K, Sever A, Jones S et al. Validation of a technique using microbubbles and contrast enhanced ultrasound (CEUS) to biopsy sentinel lymph nodes (SLN) in pre-operative breast cancer patients with a normal grey-scale axillary ultrasound. *Eur J Surg Oncol* 2013; 39: 760-5.
9. Reyes F, Noelck M, Valentino C et al. Complications of methylene blue dye in breast surgery: case reports and review of the literature. *J Cancer* 2010; 8: 20-5.

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