EDITORIAL

Diagnose Prostate Cancer with Transrectal Elastosonography

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ABSTRACT

Prostate cancer diagnosis continues to be confirmed primarily through histopathology (PCa). For prostate biopsies, Transrectal Ultrasonography (TRUS) in grey scale (B-mode), which is based on increased brightness in accordance to the strength of the echo, is frequently employed. The grey scale TRUS is helpful in directing needles into the targeted area in accor-dance with the biopsy technique, but in up to 50% of cases, it is unable to distinguish between normal and malignant tissue. The greater density of the neoplastic tissues is known to influence the flexibility of the tissue. Consequently, when compressed and decompressed, cancer tissues project in a distinct way, making it possible to distinguish them from typical healthy tissue

Key Words: *Neoplastic tissues; Biopsy; Prostatectomy; Elastosonography; Acoustic radiation.*

INTRODUCTION

Using tissue hardness as a sign of malignancy, ultrasound elastosonography is a new and effective diagnostic method. The fundamental idea behind elastosonography is that tissue compression results in strain.(Displacement), which is smaller in soft tissues than in hard ones, is scored determining how much an ultrasonic beam is distorted under the exertion of outside pressure Infrared ultrasound elastography is a colour scale corresponding to is shown over the B-mode image.

Elastic tissue

TRES is a newly developed technology for transrectal ultrasound imaging. It could depict the relative stiffness of the prostate gland's tissue. This can distinguish cancer foci from healthy tissue inside of the prostate gland. TRES can detect up to 90% of PCa, according to a recent study. 80 percent specifically.

While the histology of the radical prostatectomy specimens served as the reference standard, the sensitivity and specificity of TRES varied from 0.71 to 0.95. Localizing the cancer foci in the prostate gland is difficult using grey scale TRUS. TRES, however, appears to be more effective at pinpointing tumour foci. Although TRES's involvement in PCa detections is still developing, its preliminary results are positive and imply that it has a greater PCa detection rate than B-mode sonography. TRES is additionally more capable of identifying PCa than a digital rectal exam. Additionally, TRES has a better detection rate than both MRI and colour Doppler ultrasonography. Importantly, TRES was said to lower the frequency of core biopsies.

Numerous studies are being conducted to determine the function of TRES in typical clinical practice. However, before recognizing TRES' normal involvement in the diagnosis of PCa, there are a few problems that need to be properly addressed. The evaluation of TRES will require further research projects based on high quality, peer-reviewed protocols. In order to obtain relevant results, trials must also have appropriate power, agreed-upon reference standards, and predefined standard sonographic parameters. Future trials will be greatly impacted by further technological development. Shear Wave Elastosonography (SWE), which was introduced in recent years, is a significant advancement in elastosonography. SWE is the process of creating shear waves in tissue by applying acoustic radiation force produced by several, precisely focused ultrasound beams[1-3].

When these waves pass through tissue, the shear wave velocity changes as a result of variations in tissue stiffness, with the wave moving more quickly in stiffer tissues than in softer tissues. Previously, the SWE technology and its guiding principles were discussed. SWE is a quantitative technology that relies far less on the operator, potentially improving cancer characterization and detection. The only elastosonography method that can currently deliver local tissue elasticity data in real time is SWE. This is pretty interesting, and the SWE may outperform elastosonography and ultrasonography in some situations[4-5].

CONCLUSION

In conclusion, the TRES seems to be more effective at detecting PCa, but the majority of reported studies lack procedure standardization. Nearly all experiments that were described used compressional techniques without any kind of standardization. This is crucial since standardization will be difficult because the compression is operator dependent. However, consistent, standardized methodology and parameters are essential for training and repeatability and will enable critical evaluation of the trials carried out in various centers. It's unclear at the moment if TRES' increased visual imaging will result in fewer biopsies.

However, fewer biopsy cores can be taken, which will result in lower morbidity, if accurate visualization of the cancer foci is

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achieved. The data that is currently available on TRUS and TRES suggests that they function differently for PCa detection, but there isn't any solid proof that TRES need to be used routinely in clinical practice. Prostate cancer localization will improve as technology continues to evolve, thanks in part to SWE. This not only makes it possible for focused biopsies, but it will also help with PCa focused therapy planning.

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