Prostate biopsies using both gray scale and 3D color flow power Doppler ultrasound (3DCFPDPU)

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In 2000, with partner Richard Sorace, MD, PhD, he founded the

intermediate and high risk prostate cancer in the medical literature

published the longest prostate cancer cure rate study on

Complicated,
as well principal author of

textbook

brachytherapy for prostate cancer, Dr. Dattoli is the co-author of

New York and at New York Hospital-Cornell University Medical Center

Assistant/Associate Professor in Brachytherapy and Radiation

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He was appointed

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New York Hospital-Cornell University Medical Center,

Surviving Prostate

Cancer Without Surgery, The Dattoli Blue Ribbon Prostate

A dozen booklets on prostate cancer subjects,

Prostate Brachytherapy Made

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Background

Prostate Cancer (CAP) diagnosis has historically been identified through random biopsies using trans-rectal ultrasound guided biopsies (TRUS).

Today's standard protocol typically consists of an "extended" pattern 10-12 core biopsy method.

This often leads to sampling errors with missed diagnoses, delayed diagnosis and the need for repeat biopsies, under staging and missing important malignancies leading to over treatment. Infection is not uncommon when using standard TRUS, which is avoided using sterile transperineal methods.

Advantages in 3D color flow power Doppler ultrasound (3DCFPDPU) include direct sampling of specific regions using the transperineal brachytherapy removable guided method as a simple outpatient procedure.

Methods

192 consecutive patients were biopsied using 3DCFPDPU between February 2012 and July 2014. Patients were positioned in the extended dorsal lithotomy position allowing maximal visualization of all regions of the prostate regardless of size. Local anesthesia was utilized. The median number of biopsies per patient was eight (8). Only 3 patients had not undergone previous biopsies and median previous biopsies = 2.

We studied tumor detection rate using combined gray scale and 3DCFPDPU with directly sampling of specific regions using the transperineal brachytherapy removable guided method as a simple outpatient method.

Methods continued

Inclusion criteria consisted of abnormal DRE, PSA kinetics 0.75ng/mg/yr, PSA >10 and % free PSA <17,

p<0.03.

Only group 4 revealed a greater Gleason 7-10 CAP

Risk Group 4. 97% biopsy positive (p<0.01)

Risk Group 3. 55% biopsy positive (p<0.1)

Risk Group 2. 19% biopsy positive (p<0.3)

Risk Group 1. 20% biopsy positive (p <0.5)

The diagnosis yield associated with Group 4 was statistically significantly higher compared to

Risk Group 1. 20% biopsy positive (p=0.15)

Risk Group 2. 55% biopsy positive (p=0.03)

Risk Group 3. 55% biopsy positive (p=0.1)

Risk Group 4. 97% biopsy positive (p=0.01)

Only group 4 revealed a greater Gleason 7-10 CAP

Conclusions

Transported template guided biopsies using gray scale and 3DCFPDPU are both highly effective and cost effective.

This may help in reducing the number of prostate biopsies performed needing in reduced post procedure morbidity, more accurate staging while allowing for enhanced detection of various CAP by targeting the most suspicious lesions.

Additional research should study the diagnostic gain associated with 3DCFPDPU.

About the Presenter

Dattoli attended the University of California at Berkeley and was the student body president of his class at Vassar College, he went on to medical school at University of California at San Francisco.

He served as a post-doctoral fellow in Radiation Oncology at Memorial Sloan-Kettering Cancer Center in New York and at New York Hospital-Cornell University Medical Center prior to returning to Florida. A pioneer in the application of 3D color flow Doppler sonography in prostate cancer, Dr. Dattoli is the co-author of three editions of the textbook

Hypoechogenic lesion

(72 patients, 648 cores)

Hypoechogenic lesion associated with pulsatile vessels

(62 patients, 434 cores)

Hypoechogenic lesion

(26 patients, 182 cores)

Hypoechogenic lesion associated with non-pulsatile vessels

(62 patients, 434 cores)

Hypoechogenic lesion associated with non-pulsatile vessels

(62 patients, 434 cores)

Hypoechogenic lesion

(26 patients, 182 cores)

Hypoechogenic lesion associated with pulsatile vessels

(32 patients, 256 cores)
192 consecutive patients were biopsied using 3DCFPD between February 2012 and July 2014. Patients were positioned in the extended dorsolitomy position allowing maximal visualization of all regions of the prostate regardless of size. Local anesthesia was utilized. The median number of biopsies per patient was eight (8). Only 3 patients had not undergone previous biopsies and median previous biopsies = 2.

We studied tumor detection rate using combined gray scale and 3DCFPDU with directly sampling of specific regions using the transperineal brachytherapy template guided method as a simple outpatient procedure.

Inclusion criteria consisted of abnormal DRE, PSA kinetics 0.75ng/mg/yr, PSA >10 and % free PSA <17, PSA density 0.27. Cores were stratified into 4 risk groups:

1. Hypoechoic only lesion (72 patients, 648 cores)
2. Hypervascular only lesion (26 patients, 182 cores)
3. Hypoechoic lesion associated with hypervascular pulsatile vessels which were synchronous and coinciding with normal cardiac pulse using duplex analysis (32 patients, 256 cores)
4. Hypoechoic lesion associated with non-pulsatile vessels suggesting independent vascular flow consistent with neoplasm also using duplex analysis (62 patients, 434 cores)

NOTE: Isoechoic regions were not biopsied. Subgroups were analyzed using chi-square, student t-test and logistic regression.