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Definitions and Management of Oligometastatic Prostate Cancer

Learning Objective: At the conclusion of this continuing medical education activity, the participant will be able to define oligometastatic prostate cancer, and describe the landscape of current and developing diagnosis and treatment paradigms.

This AUA Update aligns with the American Board of Urology Module on Oncology, Urinary Diversion, and Adrenal. Additional information on this topic can be found in the AUA Core Curriculum section on Oncology-Prostate.

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KEY WORDS: prostate cancer, oligometastatic prostate cancer, PSMA PET scan, metastasis directed therapy, local consolidative therapy

INTRODUCTION

While localized prostate cancer is most commonly treated with the intent to cure via radical prostatectomy (RP) or radiotherapy, metastatic prostate cancer has historically been deemed beyond curative potential and is treated with systemic therapies regardless of the burden of metastatic disease.[1] Historically, all burdens of metastatic disease were considered incurable and initially treated with androgen deprivation therapy (ADT). In 1995 Hellman and Weichselbaum first proposed the concept of oligometastatic disease as an intermediate metastatic state between localized disease and widespread metastatic disease.[2] This concept challenged the prevailing thought that patients with metastatic cancer could not be cured with definitive local therapy and/or metastasis-directed therapies and has led to a paradigm shift that has permeated the oncologic management of many cancers, including prostate cancer. While the definition and management of oligometastatic prostate cancer are currently evolving, the idea that the oligometastatic state is a unique biological time point of disease between localized and widespread metastatic involvement has led to investigations into new therapeutic strategies.

As the acceptance of oligometastatic disease as a separate disease entity has increased, new questions and dilemmas have arisen. Some of these questions include: How should oligometastatic disease be defined? What imaging modalities should guide our designation of oligometastatic prostate cancer? In patients with de novo oligometastatic prostate cancer, is there an oncologic benefit to local consolidated therapy? What systemic therapies are appropriate for lower-volume disease states? What is the role of metastasis directed therapies in oligometastatic prostate cancer? This Update will review these questions and the overarching treatment paradigm of oligometastatic prostate cancer.

DEFINITION

Interestingly, no definitive consensus has been agreed upon to define oligometastatic prostate cancer. Many early retrospective studies discussed below have attempted to define oligometastatic prostate cancer using varying numbers of lesions identified.[3-10] Soloway et al were among the first to stratify patients based on the burden of metastatic disease in 1988, utilizing a semiquantitative extent of disease grading system.[10] Since that time many studies have used fewer than 5, 4, or 3 lesions with varying criteria on lesion location.[4,9] Additionally, some studies have utilized conventional imaging techniques, while some have allowed novel positron emission tomography (PET) imaging.[6] Many of the decisions to evoke a number of defined lesions were attempts to better stratify this population, but were largely based on clinical experiences or the current imaging modalities available at the time of analysis.

Interestingly, the CHAARTED trial did not set out to define oligometastatic prostate cancer; however, its terms used to define high- and low-volume disease have been carried forward, and the CHAARTED definition of low-volume disease is often utilized as a guide for studies and trials. In the CHAARTED trial, high-volume disease was defined as 4 or greater bone metastases with at least 1 lesion outside the axial skeleton, or any number of visceral metastasis based on conventional imaging. Low-volume disease would encompass any number of lymph node metastases in the pelvis, any number of axial skeleton bone metastases, or 3 or fewer bone lesions if 1 is outside the axial skeleton, providing a framework for defining oligometastatic disease. **Subsequently, modern trials have utilized this CHAARTED definition of low-volume disease as a benchmark, which may serve as a guide for further defining oligometastatic disease.**

Future definitions of oligometastatic prostate cancer will likely vary between clinical trials and guidelines. **Currently, there are >60 active clinical trials investigating oligometastatic prostate cancer, and despite the variations, it is reasonable to consider a broad definition of oligometastatic disease of <5 metastatic sites and exclusion of patients with visceral metastasis. However, it is important to realize that oligometastatic prostate cancer in a more general sense refers to a biological state that precedes widespread metastatic disease, where response to treatment is more durable and cure may potentially be obtainable. Furthermore, oligometastatic prostate cancer can be diagnosed in 2 unique patient populations depending on when it is diagnosed: synchronous oligometastatic prostate cancer, in which the untreated primary tumor and low-volume metastatic disease are diagnosed at the same time, and metachronous oligometastatic prostate cancer or oligometastatic recurrence or oligorecurrent prostate cancer, which refers to low-volume metastatic disease identified after the primary tumor has been treated during the presume localized setting.** In the future it is possible that the American Joint Commission on Cancer or the AUA will more clearly define oligometastatic prostate cancer; however, in the meantime it is important to consider these variable definitions when interpreting studies and counseling patients.

IDENTIFICATION

Conventional imaging methods. Conventional imaging strategies for prostate cancer include CT, MRI, and technetium Tc 99m medronate bone scan.[11] Currently, CT is the most common imaging modality to assess for sites of metastatic disease in prostate cancer. While not commonly used in the metastatic setting, MRI may diagnose pelvic metastasis as part of

ABBREVIATIONS: androgen deprivation therapy (ADT), biochemical recurrence (BCR), methyl carbon-11 (C-11), external beam radiotherapy (EBRT), F-18 piflufolastat prostate-specific membrane antigen positron emission tomography (F-18 DCFPyL-PET/CT), Food and Drug Administration (FDA), 4-fluoro-4-deoxyglucose (FDG), metastasis-directed therapy (MDT), sodium fluoride (NaF), positron emission tomography (PET), prostate-specific membrane antigen (PSMA), radical prostatectomy (RP), stereotactic body radiotherapy (SBRT)

the initial workup and staging of localized prostate cancer. Currently, technetium Tc 99m medronate scintigraphy is a popular method for identifying bone metastases in patients with prostate cancer.[11]

PET and metabolically active radiotracers. PET has been recently used in conjunction with CT and MRI for prostate cancer staging, assessing for biochemically recurrent disease and for metastatic evaluation in select patients. Several key radiotracers offer promising findings which highlight the potential to improve detection rates and identify optimal treatment plans. Although an increase in the rate of glycolysis is observed in most cancers, prostate cancer differs as it heavily relies upon fatty acid oxidation.[12,13] This important observation is why traditional FDG (4-fluoro-4-deoxyglucose)–PET is not very effective and led to the usage of choline-based imaging. Methyl carbon-11 (C-11) choline PET was the first PET radiotracer approved for the prostate and has demonstrated a positive predictive value ranging from 53%-96% in the biochemical recurrence (BCR) setting. However, C-11 choline PET is limited by its requirement of an onsite cyclotron and low sensitivity at low PSA values.[14] C-11 choline PET is Food and Drug Administration (FDA) approved for detection of disease at BCR and progression of disease in bone and soft tissues. F-18 fluciclovine PET scan has demonstrated an 87%-91% correct localization rate, ultimately leading to its FDA approval for detection of disease at BCR and progression of disease in bone and soft tissues. Another tracer that has been used for bone detection is F-18 sodium fluoride (NaF) PET. In a meta-analysis of the diagnostic performance of F-18 NaF-PET/CT, it was found that the overall diagnostic performance of F-18 NaF-PET/CT is superior to ^{99m}Tc-bone scintigraphy (AUC 0.842; $P < .001$; 4 studies) As such, it is approved by the FDA as an alternative to bone scintigraphy.[15] **To date, 3 non–prostate-specific membrane antigen (PSMA) PET imaging modalities are approved by the FDA for prostate cancer, C-11 choline PET, F-18 fluciclovine PET, and F-18 NaF PET.[16]**

PET and PSMA. PSMA, also known as glutamate carboxypeptidase II, is a transmembrane glycoprotein that becomes overexpressed in prostate cancer cells.[17] In recent years, PSMA PET scans and PSMA theranostics have become of greater interest, and currently the FDA has approved 2 PSMA PET scans for prostate cancer, gallium 68 (^{68}Ga)–PSMA-11 PET and F-18 piflufolastat PSMA PET (F-18 DCFPyL-PET/CT). In a recent prospective trial, the proPSMA trial, 302 patients with biopsy-proven high-risk prostate cancer were randomized to receive conventional imaging or ^{68}Ga-PSMA-11 PET.[18] ^{68}Ga-PSMA-11 PET demonstrated a 27% greater accuracy compared to conventional imaging and an improved sensitivity (38%) and specificity (91%). The second PSMA PET scan approved by the FDA, ^{18}F-DCFPyL-PET/CT, was evaluated in the phase III CONDOR study, in which 208 patients with biochemically recurrent prostate cancer underwent ^{18}F-DCFPyL-PET/CT.[19] The CONDOR study demonstrated a correct localization rate of 84.8%-87.0% and 63.9% patients had a change of their intended management based on the ^{18}F-DCFPyL-PET/CT. **Both ^{68}Ga-PSMA-11 PET and ^{18}F-DCFPyL-PET/CT are FDA approved for detection of disease at initial staging, BCR, and progression of disease in bone and soft tissues.[16]**

While PSMA PET scans have generated interesting results and provide an opportunity for earlier detection of metastatic disease, it is yet to be seen if this will translate into improved long-term survival outcomes. However, with earlier detection, the rates of oligometastatic prostate cancer detection will increase. Furthermore, there are multiple PSMA PET tracers currently being used or developed that are not yet FDA approved, including but not limited to ^{18}F-PSMA-1007 PET/CT, ^{68}Ga a-PSMA-I&T, ^{64}Cu-PSMA-617, and radiohybrid PSMA 7.3c. The field of PSMA imaging is evolving rapidly and it is expected that additional radiotracers will be approved in the coming years. Advances would be improved sensitivity, decreased urinary excretion, longer half-life (shelf stability), and lower costs of the tracers.

SYSTEMIC TREATMENT

Originally when patients presented with oligometastatic prostate cancer, the standard therapy was ADT, which included surgical castration, luteinizing hormone-releasing hormone agonists, or antagonists with or without antiandrogen treatment. However, based on multiple randomized clinical trials (based on conventional imaging), clinicians have begun to treat metastatic prostate cancer with a combination of ADT and chemotherapy or novel androgen receptor blockade.[20,21]

Docetaxel. The CHAARTED trial first demonstrated that docetaxel and ADT were more efficacious than ADT alone in men with metastatic hormone-sensitive prostate cancer.[22] Median survival was greater for the combination group than the ADT alone group (57.6 months vs 44 months, HR: 0.61, $P < .001$). However, when patients were stratified according to either high- or low-volume metastatic disease in a subgroup analysis, the benefit was confirmed in high-volume disease (HR 0.63, $P < .001$) but was not seen in low-volume disease (HR 1.04, $P = .86$). This was the first suggestion that escalation of systemic therapy in low-volume disease may not be appropriate.[21,22]

The GETUG-AFU15 was a European randomized controlled trial that similarly compared the efficacy of docetaxel plus ADT vs ADT alone in metastatic castrate sensitive prostate cancer.[23,24] It was reported that clinical progression-free survival was greater in the treatment group with docetaxel than the control group (23 months vs 15 months, HR: 0.75, $P = .0147$). However, treatment did not show a statistically significant survival benefit, with the difference being 58.9 months vs 54.2 months in the control group (HR: 1.01, 95% CI: 0.75-1.36). Subsequent subset analysis also confirmed no survival advantage in low-volume disease, while demonstrating a survival benefit in high-volume disease.[23,24]

The STAMPEDE trial is a large, randomized, multiarm, multistage study. In arm C, the trial compared ADT + docetaxel and ADT alone in patients with metastatic castrate sensitive prostate cancer.[25] The trial demonstrated a significant increase in overall survival (65 months vs 43 months, HR: 0.73, 95% CI: 0.59-0.89; $P = .002$). Interestingly, unlike the CHAARTED trial and the GETUG-AFU15 trial, on subset analysis the benefit did remain significant in low-volume disease. One proposed explanation is that STAMPEDE included nearly 90% of patients with an untreated primary tumor compared to 45% in CHAARTED and GETUG-AFU15, impacting the disease burden between these populations.[25] Additionally, geographic location and access to subsequent therapies were likely different among these trial participants. **In summary,**

while overall survival benefit of docetaxel with ADT over ADT alone has been demonstrated in patients with newly diagnosed metastatic prostate cancer, not all patients benefit. In particular, the CHAARTED study reported benefit in the high-volume metastatic patients. Collectively, patients with oligorecurrent and low-volume disease appear less likely to benefit from ADT plus chemotherapy.

Abiraterone. Abiraterone acetate (AA) is a highly selective cytochrome P450 17-alpha-hydrolylase, which significantly reduces levels of androgen production.[26] In the STAMPEDE phase III trial arm G, 1,917 patients underwent randomization to receive ADT plus abiraterone acetate plus prednisolone or ADT alone.[27] The primary outcome was overall survival with an intermediate outcome of failure-free survival. ADT plus abiraterone and prednisolone significantly improved rates of overall and failure-free survival when compared to ADT alone. A post hoc analysis stratifying based on the CHAARTED definition of high- and low-volume disease subsequently confirmed a survival advantage in both high and low volumes.[28] However, this analysis is limited in its minimal enrollment of recurrent disease, as only 98 patients had previously had their primary tumor treated.[27] **In summary, abiraterone is a treatment option for synchronous and metachronous oligometastatic prostate cancer.**

Apalutamide. Apalutamide is a selective competitive antagonist of the androgen receptor. The TITAN trial compared apalutamide plus ADT vs ADT alone in a large phase III randomized controlled trial.[29] The trial demonstrated a survival advantage with apalutamide (HR: 0.67, $P = .005$) with a median follow-up of 22.7 months. Of the 1,052 enrolled patients, 16.4% had prior therapy to the primary tumor and 37.3% had low-volume disease. Subset analysis of low-volume disease trended toward improvement in overall survival, and metachronous disease demonstrated a significant improvement in radiographic progression-free survival. **In summary, apalutamide plus ADT likely offers a treatment option both in synchronous and metachronous oligometastatic disease.**

Enzalutamide. Enzalutamide is an androgen-receptor signaling pathway inhibitor. In the ENZAMET trial, enzalutamide plus ADT was compared to ADT in a phase III randomized controlled trial and demonstrated a survival advantage in low-volume disease (HR: 0.43).[30] Interestingly, subset analysis of patients with metachronous cancer also demonstrated a significant improvement in radiographic progression-free survival (HR: 0.42). **In brief, enzalutamide plus ADT provides a treatment option for both synchronous and metachronous oligometastatic prostate cancer.**

LOCAL CONSOLIDATED THERAPY

Safety of local consolidative surgery for patients with oligometastasis. RP is associated with many side effects, including incontinence, impotence, lymphoceles, urine leaks, and other postoperative complications which may impact a patient's quality of life.[31,32] Published studies evaluating the role of cytoreductive RP have reported similar rates of Clavien grade 3 complications (3.5%-10%) compared to reported complications from men undergoing RP for localized disease.[33,34] Additionally, cytoreductive prostatectomy has been shown to palliate local symptoms compared to observation (7% vs 35%).[35] Reichard et al reported a single-institutional experience with cytoreductive prostatectomy in 14 metastatic castrate-resistant prostate cancer patients and reported 1 Clavien 3 complication, 3 Clavien 2 complications, and 1 Clavien 1 complication.[36] The authors similarly conclude that cytoreductive prostatectomy is feasible with limited minor complications. It is important to consider the risk of complications, adverse consequences of surgery, and the need to palliate local symptoms when considering local consolidative surgery.

Impact of cytoreductive RP on survival. Cytoreductive RP in oligometastatic disease has been proposed as a potential option to improve overall survival. Dai et al recently published the results from a phase II randomized controlled trial comparing ADT plus local consolidative therapy to ADT alone.[37] The trial enrolled 200 patients, of whom 96 of the 100 patients in the treatment arm received ADT plus local consolidative therapy (85 radical cytoreductive prostatectomy and 11 radiotherapy).[37] With a median follow-up of 48 months, median radiographic progression-free survival was not reached in the treatment group compared to 40 months in the control group (HR 0.43, $P = .001$).[37] Three-year overall survival was also significantly improved at 88% in the treatment group compared to 70% in the control group (HR 0.44, $P = .008$). **Given the small numbers of radiation patients, conclusions regarding consolidative whole pelvis radiation are limited, but this study provides the first high-quality evidence that radical cytoreductive prostatectomy may provide a survival benefit.**

While phase III trials are eagerly awaited, multiple retrospective studies have shown improved progression-free survival. While these studies are subject to selection bias and confounded by factors that cannot be controlled for in their analysis, their positive findings do provide hypothesis-generating data to support the prospective trials. A population-based study from the Surveillance, Epidemiology, and End Results database reported that cytoreductive RP in patients with metastatic disease improved both overall survival (67%) and cancer-specific survival (76%) compared to patients receiving no local therapy (23% and 49%).[35] Heidenreich et al, in a retrospective case-control study, evaluated cytoreductive RP plus ADT vs ADT alone in low-risk metastatic prostate cancer patients.[38] The authors report that cytoreductive RP was feasible, and while overall survival was unchanged, they demonstrated significantly better clinical progression-free survival (38.6 vs 26.5 months, $P = .032$).

Early evidence suggests that radical cytoreductive prostatectomy may have a role in the management of synchronous oligometastatic prostate cancer. However, until level 1 evidence has demonstrated an oncologic benefit to cytoreductive RP, it should not be performed outside the scope of a clinical trial. Fortunately, 2 large active trials are underway to address this clinical question, including SWOG 1802 (NCT03678025) and SIMCAP (NCT03456843).

Impact of local radiotherapy on survival. Two retrospective, large database studies reported an improvement in overall survival for men who received radiotherapy for the primary tumor compared to those who received ADT alone.[39-41] However,

these studies are limited by the retrospective nature preventing strong conclusions. Two published prospective randomized control trials sought to overcome the challenges of trials in this space and have elucidated the outcomes of radiation to the primary tumor in metastatic prostate cancer. The HORRAD trial, published in 2019, included patients who either received ADT alone or ADT and external beam radiotherapy (EBRT) in a randomized 1:1 ratio. The authors report no significant difference was found in overall survival (HR: 0.90; 95% CI: 0.70-1.14; $P = .04$).[42] However, they did note a nonsignificant trend toward a survival benefit in low-volume disease, which is defined as having fewer than 5 bone metastases (HR: 0.68; 95% CI: 0.42-1.10; $P = .4$).[42,43] In arm H of the STAMPEDE trial, 2,061 men underwent randomization, resulting in 132 men receiving EBRT and 1,029 receiving standard treatment. Although this trial did include all burdens of synchronous metastatic prostate cancer, the authors did perform a subset analysis on patients with low-volume disease. In the subset analysis for patients with low metastatic burden, the authors demonstrated an improved 3-year overall survival (73% control vs 81% EBRT). Making definite conclusions regarding the survival benefit should be cautioned as the STAMPEDE arm H subanalysis was underpowered and in the setting of mostly ADT alone without use of the more advanced androgen receptor therapies available today.

Burdett et al published a STOPCAP meta-analysis in 2019 that evaluated data from the HORRAD trial and the STAMPEDE trial.[43] Their analysis found no statistical improvement in overall survival nor progression-free survival. However, there was an absolute survival improvement of 7% at 3 years in low-volume disease, defined as fewer than 5 bone metastases. **In summary, local consolidative radiotherapy may provide a survival advantage in oligometastatic prostate cancer when given in combination with ADT alone; however, stronger evidence is required prior to adoption to generalized practice in the current setting of advanced androgen receptor targeting and triplet therapy approaches.**

METASTASIS-DIRECTED THERAPY

Radiotherapy. Currently, much controversy exists regarding the role of metastasis-directed therapy (MDT) in oligometastatic prostate cancer. It has been suggested MDT may offer selected patients with limited metastatic disease prolonged survival and even a chance at cure. **Most commonly the radiotherapy used for MDT is stereotactic body radiotherapy (SBRT), which uses high-dose radiation in a small number of doses to extracranial sites of metastasis.** While most of the published literature is comprised of retrospective studies, 2 prospective randomized trials are now published evaluating SBRT as MDT in oligometastatic prostate cancer.

SABR-COMET was a phase II trial evaluating stereotactic ablative radiation in oligometastatic various cancers.[44] The trial included 99 patients, of whom 33 were randomized to a control group and 66 to the SABR group. The trial reported a median overall survival of 28 months in the control group vs 41 months in the SABR group (HR 0.57, $P = .090$), suggesting a survival benefit with SABR. It should be noted that 3 patients (5%) in the SABR group died from complications of therapy, highlighting that MDT is not without risk. Additionally, this study suffers from distributional bias, particularly with colorectal cancer (27% of the control group vs 14% of the SABR group) and prostate cancer (6% of the control group and 21% of the SABR group). The phase II, randomized, controlled STOMP (Surveillance or metastasis directed Therapy for OligoMetastatic Prostate) trial evaluated surveillance vs MDT in 62 patients (31 treated with MDT: 25 with SBRT and 6 with surgery).[45] At a median follow-up of 3 years, MDT trended toward improved ADT-free survival, though not statistically significant (13 months vs 21 months, HR 0.60, $P = .11$). The STOMP trial is limited by its small number of patients but provides a signal that MDT may increase ADT-free survival. This trial highlights the difficulties of trial design in this space, particularly small patient numbers, heterogenous indications of ADT initiation, length of trial design, and ambiguity as to the clinical relevance of ADT-free survival as an intermediate end point. In the more recent phase II randomized controlled ORIOLE trial, Phillips et al evaluated SBRT in 54 oligorecurrent prostate cancer patients (18 patients managed with surveillance and 36 treated with SBRT).[46] SBRT demonstrated an improvement in median progression-free survival at 6 months (not reached vs 5.8 months, HR 0.30, $P = .002$). Despite a clinically significant result, this trial is limited by its small number of patients enrolled and the clinical relevance of a 6-month progression end point. It should also be noted the STOMP trial utilized C-11 choline PET while the ORIOLE trial utilized PSMA PET imaging. Acknowledging these trials limitations, they serve as the foundation of radiotherapy MDT in prostate cancer to guide future trials.

In a recent large systematic review and meta-analysis of SBRT in metachronous oligometastatic prostate cancer, Yan et al identified 10 studies meeting inclusion criteria with a total of 653 patients treated with SBRT.[47] Overall local control rate was 97%, median ADT-free survival was 24.7 months, and 3-year radiographic progression-free survival was 39%. SBRT MDT is also well tolerated; of the 653 patients included there was only 1 reported grade 3 bone toxicity. The data suggest that SBRT provides effective local control of the treated metastatic lesion with minimal significant toxicity, yet long-term data regarding the impact of prostate cancer survival and overall survival are still lacking.

Surgical excision. Published data are much more sparse for surgical MDT. While the STOMP trial included surgical excision MDT in its treatment cohort, only 6 patients received surgical MDT preventing any significant interpretation.[45] While no other randomized controlled trials on this topic are published, a few studies have retrospectively evaluated surgical MDT. In a large retrospective series, Boeri et al evaluated surgical MDT (n=191), EBRT (n=63), and ADT (n=74) in oligometastatic patients with lymph node only metastasis following RP.[48] Surgical MDT (HR 0.56) and EBRT (HR 0.46) demonstrated improved radiographic progression-free survival compared to ADT alone. However, this study utilized conventional imaging rather than more modern PSMA PET imaging and did not demonstrate any advantage over standard of care whole pelvis radiation. Additionally, Bravi[49] and Andrews[50] et al published recent retrospective series evaluating salvage lymph node dissection in men with PSA recurrence and nodal only disease following RP, demonstrating a possible

PSA benefit. These results highlight that many men have limited benefit from MDT in lymph node only disease, yet in a small subset of patients there may be a durable benefit. As a whole, there is a paucity of data regarding the role of surgical MDT, and prospective study is needed before more generalized utilization.

FUTURE RESEARCH AND CONCLUSIONS

The management of oligometastatic prostate cancer is evolving rapidly as we eagerly await many of the active therapeutic and diagnostic trials discussed above. A novel area of future interest in this space is theranostic PSMA, which is now FDA approved for use in metastatic castrate-resistant prostate cancer, and clinical trials are actively pursuing theranostic PSMA in earlier disease settings. Additionally, as no consensus definition of oligometastatic prostate cancer currently exists, it will be important to prioritize biomarker development to further biologically characterize the disease state. It is important to remember that oligometastatic disease is likely enriched in distinct biological subgroups, and identifying these groups and how to best treat them will likely provide far more answers/improvement than strictly counting the number of sites identifiable by the current imaging modality. Currently local consolidation and/or MDT has not yet been supported by level 1 evidence, and providers are cautioned in adopting these investigational treatments outside the setting of a clinical trial.

DID YOU KNOW?

- While varying definitions of oligometastatic prostate cancer have been used in studies, it is reasonable to consider a broad definition of oligometastatic disease of <5 metastatic sites and exclusion of patients with visceral metastasis.
- Oligometastatic prostate cancer in a more general sense refers to a biological state that precedes widespread metastatic disease, where response to treatment is more durable and cure may potentially be obtainable.
- Currently systemic therapy remains the standard of care for oligometastatic prostate cancer treatment outside the setting of a clinical trial.
- Early evidence suggests that radical cytoreductive prostatectomy and local consolidative radiation may have a role in the management of synchronous oligometastatic prostate cancer. However, until level 1 evidence has demonstrated an oncologic benefit they should not be performed outside the scope of a clinical trial.
- Early data suggest there may be a benefit with MDT in oligometastatic prostate cancer; however, prospective study is needed before more generalized utilization.

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Study Questions Volume 42 Lesson 26

1. The CHAARTED trial strict definition of high-volume disease is
   a. Five or more metastatic lymph nodes
   b. Four or greater bone metastases with at least 1 lesion outside the axial skeleton, or 2 or more visceral metastases
   c. Five or greater bone metastases with at least 1 lesion outside the axial skeleton or any number of visceral metastases
   d. Four or greater bone metastases with at least 1 lesion outside the axial skeleton or any number of visceral metastases

2. Which of the following imaging PET CT modalities was approved based on a localization rate of approximately 65% in the CONDOR study?
   a. PSMA PET
   b. C-11 choline PET
   c. ^{18}F-DCFPyL-PET
   d. F-18 NaF PET

3. Which of the following systemic agents has yet to be evaluated in oligometastatic hormone-sensitive prostate cancer?
   a. Enzalutamide
   b. Docetaxel
   c. Abiraterone
   d. Olaparib

4. Which phase III clinical trial is currently ongoing to assess the role of cytoreductive radical prostatectomy?
   a. SWOG 1802
   b. G-RAMMP
   c. TROMBONE
   d. SIMCAP

5. In the phase II trial from Dai et al, ADT plus local consolidative therapy was associated with significantly improved 3-year overall survival when compared to
   a. ADT + docetaxel
   b. ADT + enzalutamide
   c. ADT + abiraterone
   d. ADT alone