**INITIAL EVALUATION**

- History and physical (H&P)
- CBC with differential, platelets, total protein, albumin, calcium, total bilirubin, alkaline phosphatase, LDH, ALT, sodium, potassium, chloride, CO₂, PT, and PTT
- Plain films of primary to include whole bone
- CT of the primary site
- MRI of the primary site
- Bone scan
- Chest x-ray and CT chest
- PET scan (exploratory)
- Consider PET/CT for osteosarcomas and small cell sarcomas
- Core needle biopsy if not done outside
- Histology review by bone tumor pathologist
- Screening MRI spine for small cell
- EKG and cardiac scan (MUGA or ECHO) if history of cardiac disease
- Insert central venous catheter
- Sarcoma Multidisciplinary Planning Conference
- Lifestyle risk assessment

**TREATMENT**

(Note: See Page 3 for chemotherapy regimen references)

- Doxorubicin, ifosfamide and vincristine for up to 6 cycles
- Resectable?
- Metastasis?
- No
- Yes
- Small cell?
- Yes
- See Page 2
- No
- Yes
- Surgery
- Viable tumor?
- No
- Yes
- Radiation therapy
- Ifosfamide and etoposide (total duration of therapy approximately 12 months)
- Good response: greater than or equal to 95% necrosis
- Ifosfamide and etoposide for 4 cycles
- Less than 95% necrosis
- Ifosfamide for 6 cycles then high dose methotrexate for 6 cycles followed by ADIC as tolerated

**SURVEILLANCE**

- H&P:
  - Every 3 months for 2 years, then
  - Every 4 months for 2 years, then
  - Every 6 months for 1 year, then
  - Annually
- CBC with differential, platelets, total protein, albumin, calcium, glucose, creatinine, total bilirubin, alkaline phosphatase, LDH, and ALT every visit
- Plain films of primary at each visit
- For pelvic primaries: MRI and x-ray each visit with H&P above
- X-ray to symptomatic bone metastases
- Bone scan for symptomatic patients with history of bone metastases
- Chest x-ray each visit with H&P above
- CT chest if chest x-ray equivocal or for surgical planning
- Sarcoma Multidisciplinary Planning Conference if further multidisciplinary decisions required

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1 Excluding chondrosarcoma not otherwise specified, and osteosarcoma of head & neck
2 CT of the primary site is not routinely done, it is optional based on clinical scenario
3 See Physical Activity, Nutrition, and Tobacco Cessation algorithms; ongoing reassessment of lifestyle risks should be a part of routine clinical practice
4 Small cell includes the following: rhabdomyosarcoma, Ewing’s Sarcoma/Primitive, neuroectodermal tumor, mesenchymal chondrosarcoma, and unclassified small cell sarcoma

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Approved by The Executive Committee of Medical Staff 04/19/2022

Department of Clinical Effectiveness V10

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Adult Primary Bone Sarcoma (High-Grade)\(^1\)

\(^1\) Excluding chondrosarcoma not otherwise specified, and osteosarcoma of head and neck

\(^2\) Small cell includes the following: rhabdomyosarcoma, Ewing’s Sarcoma/Primitive, neuroectodermal tumor, mesenchymal chondrosarcoma, and unclassified small cell sarcoma

\(^3\) For patients without further surgical options, consider gemcitabine/docetaxel, regorafenib, or clinical trials

**INITIAL PRESENTATION**

**TREATMENTS**

(Note: See Page 3 for chemotherapy regimen references)

**SURVEILLANCE**

- **H&P**
  - Every 3 months for 2 years, then
  - Every 4 months for 2 years, then
  - Every 6 months for 1 year, then
  - Annually

- CBC with differential and platelets annually

- Total protein, albumin, calcium, glucose, creatinine, total bilirubin, alkaline phosphatase, LDH, and ALT every other visit for 5 years, then annually

- Plain films of primary at each visit

- X-ray to symptomatic bone metastases

- MRI at end of treatment for pelvic primaries

- Bone scan for symptomatic patients with history of bone metastases

- Chest x-ray each visit with H&P above

- CT scan chest if chest x-ray equivocal or for surgical planning

- Sarcoma Multidisciplinary Planning Conference if further multidisciplinary decisions required

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**Note:** Consider Clinical Trials as treatment options for eligible patients.

The chemotherapy regimens recommended are intensified by both dose and schedule, which often requires the specialized monitoring and management provided at a comprehensive cancer center.

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**Adult Primary Bone Sarcoma (High-Grade)**

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**SUGGESTED READINGS**

**Doxorubicin/cisplatin for osteosarcoma:**


**Doxorubicin/ifosfamide for osteosarcoma and soft-tissue sarcomas:**


**High-dose ifosfamide for osteosarcoma and soft-tissue sarcoma:**


**Gemcitabine/docetaxel for osteosarcoma:**


**Regorafenib for osteosarcoma:**

This practice algorithm is based on majority expert opinion of the Sarcoma Center Faculty at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following:

### DEVELOPMENT CREDITS

This practice algorithm is based on majority expert opinion of the Sarcoma Center Faculty at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following:

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