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Oncological and patient reported outcomes after primary chondrosarcoma resection of the mobile spine in 33 patients.

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Background: A complicating factor of spinal chondrosarcoma is the anatomy that often does not allow for an en-bloc resection with negative margins. Current literature is limited by small case-series, primarily focusing on oncological outcome after chondrosarcoma resection of the spine. Patient reported outcomes are needed to help us understand function and quality of life after surgical treatment.
Questions/Purposes: The aims of this study are (1) to evaluate postoperative functional outcome and quality of life and (2) to assess factors associated with oncological outcome (i.e. survival and recurrence) of patients after primary resection of mobile spine chondrosarcoma.
Patients and Methods: We identified 33 patients who had histological confirmation of a primary chondrosarcoma resection of the mobile spine (cervical, thoracic, and lumbar) between 1982 and 2014, of which 18 (55%) had their primary resection done at a different institution and were referred to us for further surgical treatment. Patients with non-conventional chondrosarcoma were excluded. To evaluate functional outcome and quality of life we sent patients an invitation letter to complete the following questionnaires: PROMIS Cancer Physical Function, PROMIS Pain Intensity, EQ-5D 5L quality of life and either the Oswestry Disability Index (ODI) or Neck Disability Index (NDI) –based on tumor location– questionnaires. Medical records of the included patients were screened for disease factors, clinical factors, and oncological outcome. Multivariate cox regression analysis was used to identify factors associated with oncological outcome and a one sample signed rank test to compare the PROMIS median to known US population values.
Results: There were twenty men (61%) and thirteen women (39%) with a median age of 50 years. At presentation 28% of the patients had neurologic deficit, 66% back pain and the thoracic spine was most commonly affected (73%). Three patients had a known metastasis (10%) and the World Health Organization (WHO) tumor grade was higher than 1 in 19 patients (66%). En bloc resection was not achievable in 42% of the cases and led to intralesional resection. Of the patients who had primary tumor resection at our institution one developed a recurrence (6.7%) and six (33%) of the patients who were surgically treated for recurrence at our institution (Fisher's exact test, *P* = 0.095). The median survival time was 10 years (Interquartile Range 3 – 17). Multivariate analysis showed that no factors were associated with increased recurrence rates and chemotherapy treatment was associated with decreased survival (Hazard Ratio 5.5, 95% CI 1.3 – 23.7, P = 0.021).
At the time of the study 20 patients were still alive and so far 12 patients have filled out the questionnaires after a median follow-up time of 5 years. The PROMIS Physical Function median T-score was 44 (range 29 – 52) and lower compared to the general chronic disease population (normal value 50, P = 0.093) and the PROMIS Pain Intensity T-score was 46 (range 44 – 51; normal value 50, P = 0.239). The median EQ-5D 5L quality of life score was 0.73 (range 0.52 – 0.86; scale from 0-1, 1 being in perfect health) and the median health score 75 (scale from 1 to 100, 100 being in perfect health). The ODI (n = 10) and NDI (n = 2) were respectively 25 and 31%, indicating moderate disability.
Conclusions: En bloc resection was not achievable in almost half of the patients and no factors were associated with increased recurrences. Hazard ratios for predicting survival should be analyzed with caution as the mortality rates in our study population were relatively low. Currently we are working on enrolling the remaining patients to fill out the patient reported outcomes.