Cranial Chordoma: A New Classification System and Validation

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Introduction

Cranial Chordomas are considered rare challenging aggressive neoplasms. Due to the rarity, and the difficulty in obtaining an adequate number of cases, therefore, currently a classification to predict surgical risk and outcome is currently not available and we propose an easy to use numerical grading system that leads to a new classification.

Methods

We retrospectively reviewed the charts and images of 42 patients with pathological confirmed diagnosis of chordoma localized in the skull base between 2005 and 2015 that underwent a craniotomy or endoscopic surgery. Statistical multivariate analysis for the selected parameters was done, and a cranial chordoma classification was developed. The numerical grading system included tumor size, site of the tumor, vascular involvement, intradural extension, brain stem invasion and recurrence of the tumor either after surgery or radiotherapy with a range of 0-29 points. The chordoma grading system was correlated with number of operations for resection, degree of resection, number and type of complications, recurrence and survival.

Results

A higher number of points in our grading system was statiscally correlated with: cranial base or combined approach against purely endonasal endoscopic approach ($p < 0.008$); the resection extent (partial, subtotal, or complete) ($p < 0.012$); number of operative stages (p, 0.014); tumor recurrence (p, 0.011); and post-operative Karnosfsy Performance Status ($p < 0.001$).

Conclusions

We propose a chordoma numerical grading system based on clinical, historical and radiographic features, which is used to create a classifications system that is beneficial to predict approaches, recurrence and postoperative outcome.

Learning Objectives

: By the conclusion of this session, participants should be able to use the parameters obtained from pre-operative imaging and the patient's previous clinical history and apply to actual chordoma cases.