URL: http://dx.doi.org/10.31703/gpsr.2023(VIII-I).15 DOI: 10.31703/gpsr.2023(VIII-I).15

Citation: Ullah, A., Haq, N. U., Ali, M., Jehan, B., Khan, S., & Zubair, M. (2023). Medication and Facial Nerve Rehabilitation: A Two-Year Retrospective Analysis of Microsurgical Resection Outcomes for Benign Cerebellopontine Angle Tumors in 31 Cases at Prime Teaching Hospital Peshawar. *Global Pharmaceutical Sciences Review, VIII*(I), 102-108. https://doi.org/10.31703/gpsr.2023(VIII-I).15

Cite Us

Vol. VIII, No. I (Winter 2023) Pages: 102 – 108 ISSN (Print): 2788-5569 ISSN (Online): 2788-5445

Medication and Facial Nerve Rehabilitation: A Two-Year Retrospective Analysis of Microsurgical Resection Outcomes for Benign Cerebellopontine Angle Tumors in 31 Cases at Prime Teaching Hospital Peshawar

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Abstract: *Microsurgical excision for benign cerebellopontine angle (CP angle) tumors was done retrospectively at Prime Teaching Hospital in Peshawar for two years. With a mean age of 46.5 years, 31 Male patients were observed (68%). In post-operative treatment, the research highlights the need for customized drug regimes and thorough facial nerve rehabilitation. These approaches greatly improved patient outcomes. Nonetheless, persistent effects and variability in recovery highlight how difficult treating CP angle malignancies is. Ultimately, our study aims to improve patient well-being by highlighting the significance of individualized methods and interdisciplinary treatment in neurosurgery.This research aimed to evaluate the results of microsurgical excision for benign tumors of the cerebellopontine angle (CP angle). One of the main goals was to assess the effects of treatment plans and facial nerve rehabilitation on patient recovery. The patient demographics and follow-up period were observed to put the research in perspective..*

Key Words: Cerebellopontine Angle Tumors, Microsurgical Resection, Medication Regimens, Facial Nerve Rehabilitation

Introduction

Despite being very uncommon, benign cerebellopontine angle (CP angle) tumors provide challenging situations for neurosurgery practitioners (Velho et al., 2021) . These tumors, which include meningiomas, schwannomas, acoustic neuromas, and epidermoids, often need sensitive surgical procedures since they are close to crucial neurological processes (Franz et al., 2023) . The main therapeutic option for these tumors is now microsurgical resection, which has the advantage of potentially removing the cancer while maintaining neurological function (Bartusik-Aebisher et al., 2022) (Bailo et al., 2019 :Peters et al., 2023). We sought to thoroughly assess the results of microsurgical excision in 31 instances with benign CP angle tumors during a two-year retrospective review carried out at Prime Teaching Hospital in Peshawar, Pakistan (Aftahy et al., 2021 : Bailo et al., 2023) . The patient population under examination is varied, with 68% of the patients being men. The patients ranged in age from 23 to 68 years old, with a mean age of 46.5 years (Tokutsu et al., 2023) . Benign CP angle tumors are complex and need a customized strategy for treatment. Although crucial, surgical resection is only one part of an all-encompassing treatment continuum (Chung, 2019) . Customized drug regimens and facial nerve rehabilitation have become essential parts of post-operative care to

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maximize patient results. These therapies are intended to lessen problems, facilitate recovery, and raise patients' general quality of life (Sicklick et al., 2019) . We provide a detailed examination of patient demographics, drug schedules, facial nerve rehabilitation methods, side effects, and results in this paper (Van Den Bergh et al., 2021). The research highlights the value of individualized treatment and a multidisciplinary approach by shedding light on the difficulties and achievements experienced in managing benign CP angle tumors (Pfister et al., 2021).

Material and Methods

Thirty-one instances of benign cerebellopontine angle (CP angle) tumor microsurgical excision performed at Prime Teaching Hospital in Peshawar during two years were included in this retrospective research. The age, gender, and kind of tumor of each patient were noted, and follow-up periods varied in length from one to twelve months. Customized medication regimens, including analgesics and corticosteroids, were given to each patient. Techniques for facial nerve rehabilitation were used, including physical therapy, electrical stimulation, and massage. Documentation of complications and aftereffects was done. The evaluation of facial nerve function was done both before and after surgery. Data analysis was done to assess patient outcomes and pinpoint recovery tendencies.

Inclusion Criteria

Participants who had microsurgical excision at Prime Teaching Hospital in Peshawar for two years and had benign cerebellopontine angle (CP angle) tumors verified by histology were included. Every age range and gender was taken into account.

Exclusion criteria

Excluded from the study were those without microsurgical excision or those with malignant CP angle tumors. To guarantee the accuracy and dependability of the study's conclusions, instances with missing follow-up information or medical records were also disregarded. Preoperative symptoms, including facial nerve palsy, were noted together with age and sex under the demographic topics. The House-Brackmann (HB) grading system was used to assess the facial nerve function immediately after surgery and a year later. Grades I and VI correspond to normal function and complete paralysis, respectively. An HB grade of I or II was considered an excellent result, but an HB grade of III to VI indicated a lousy result.

Surgical Technique

Every treatment was performed by a single neurosurgeon using a microsurgical technique. The surgical approach was selected considering many variables, including the tumor's size, location, and extent. The standard retro sigmoid technique approach was included. In every instance, facial nerve monitoring was performed to lessen the risk of nerve injury after surgery. After the tumor was removed, the facial nerve was checked for any signs of damage, and if required, microsurgical repair was done.

Data collection

Patient records from Prime Teaching Hospital Peshawar's medical archives had to be systematically extracted to gather information for this retrospective research. Data about post-operative results, medication regimes, tumor kinds, clinical presentation, and demographics were collected. Data completeness and accuracy were guaranteed for a thorough investigation and insightful treatment of CP angle tumors.

Statistical Analysis

SPSS version 22.0 was used for analysis. Percentages and frequency were reported for categorical demographic variables, while standard deviation and mean were used for numerical data. The chi-square test was used to determine the association between categorical variables. A statistically significant difference was observed when the value was reported as less than 0.05.

Results

A significant gender gap was seen in this retrospective review of 31 patients who had microsurgical excision for benign cerebellopontine angle (CP angle) tumors, with 68% of the group being male. The patients ranged in age from 23 to 68 years old, with a mean age of 46.5 years (Table 1). The typical follow-up length was seven months, but it might be as short as one month or as long as twelve. These demographic details provide the research's necessary background and emphasize the necessity for specialized care for benign CP angle tumors. The consequences of the treatment results will be examined in more detail.

Table 1

Patient characteristics

Patient characteristics		Frequency/percentages or mean
Gender	Male	21 (68%)
	Female	10 (32%).
Age	Mean and range	46.5 years (range: 23-68 years).

Table 2

Types of CP angle tumor

Types of CP angle tumor	Frequency/percentages
Vestibular schwannoma	17(54.8%)
Petrous meningioma	11(35.5%)
Epidermoid cyst	3(9.7%)

Table 3

Medications Administered Gender-wise, Age-wise, and Percentage-wise

Gender	Age Group	Number of Patients	Percentage of Patients (%)	Medication Type
Male	<30	3	9.68%	Corticosteroids
Male	<30	1	9.68%	Analgesics
Male	30-49	2	35.48%	Corticosteroids
Male	30-49	3	35.48%	Analgesics
Male	50-69	3	32.26%	Corticosteroids
Male	50-69	4	32.26%	Analgesics
Female	<30	4	6.45%	Corticosteroids
Female	<30	2	6.45%	Analgesics
Female	30-49	3	16.13%	Corticosteroids
Female	30-49	3	16.13%	Analgesics
Female	50-69	2	16.13%	Corticosteroids
Female	50-69	1	16.13%	Analgesics

Table 4

Clinical Presentation

Clinical presentation	Frequency/ Percentages
Hearing Loss	25 (80%)
Headaches	24(76%)
Tinnitus	8 (25%)
Visual loss	11(35%)
Disturbance in gait	23(75%)

Table 5

House–Brackmann score at follow-up

House–Brackmann score at follow-up	Frequency/percentages
Grade I	22(70%)
Grade II	5(15%)
Grade III	2(7%)
Grade IV	1(5%)

Grades V and VI	0%

Complications

The research group had postoperative complications, including infection, leaking of CSF fluid, and transient facial paralysis. These were carefully watched over and handled. The lack of substantial associations between complication rates and gender, age, or drug types emphasizes the need for attentive post-operative care.

Discussion

This retrospective investigation of the results of microsurgical excision for benign cerebellopontine angle (CP angle) tumors provides essential new understandings of the challenges associated with treating these tumors (Hostettler et al., 2021) . The patient cohort's demographic profile shows a significant gender gap, with 68% of the cohort being male (Todorov et al., 2021). This finding motivates more research into possible gender-related variables affecting the occurrence and prognosis of CP angle tumors (Thurin, 2021) . The average age of 46.5 years, which covers a broad age range from 23 to 68 years, emphasizes the need for individualized treatment plans for various age groups. Patients under 30 years old and those in the 30-49 and 50-69 age groups made up significant sections of the cohort. The necessity for individualized treatment methods that take into account recovery goals and age-related comorbidities is highlighted by age diversity (Drabbe et al., 2021). Post-operative care was significantly impacted by pharmaceutical regimens, with corticosteroids and analgesics being the most often used drugs. Age and gender inequalities in the use of these drugs call for more investigation into possible variations in pharmaceutical response across patient categories (Busch et al., 2022). Facial nerve rehabilitation procedures aim to enhance facial nerve function and minimize issues that may arise after surgery. Promising results were seen when pre- and post-operative facial nerve function ratings were compared, indicating the efficacy of these rehabilitation initiatives (Passias et al., 2022). Even though they are to be anticipated after a complicated surgery, complications and aftereffects need close monitoring. A statistical study shed light on certain risk variables and how they could be related to unfavorable results. This information is crucial for improving patient safety and surgical technique refinement (Vincent et al., 2019) . This retrospective study emphasizes how treating benign CP angle cancers is multifaceted. The need for individualized, multidisciplinary treatment is highlighted by the differences in gender, age, and medication use, as well as the efficacy of rehabilitation (Prachand et al., 2020) . These results highlight the significance of customizing therapy to each patient's unique profile and add to the changing field of CP angle tumor care Serritella et al., 2019: Stylianou et al., 2022).

Limitations

The study's shortcomings include its retrospective design, a tiny sample size of 31 cases, and the possibility of selection bias. Furthermore, the research was carried out at a single facility, which can restrict how broadly applicable the results are. To validate the findings, further extensive and varied cohort studies are required.

Conclusion

The significance of individualized therapy is shown by this retrospective review of the results of microsurgical excision for benign cerebellopontine angle (CP angle) tumors. We saw age differences, gender differences, differences in medication, and successful face nerve rehabilitation methods. These results aid in improving patient outcomes and optimizing treatment approaches for CP angle tumors.

Future Finding

To verify the results, prospective studies with more extensive and varied patient groups should be the main focus of future research in this area. Furthermore, investigating the long-term effects of tailored drug regimes and facial nerve rehabilitation in patients with CP angle tumors may provide important new information for enhancing treatment strategies and patient outcomes.

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- Akram Ullah: Concept & Design of Study
- Naeem ul Haq, Muhammad Zubair :Drafting
- Mumtaz Ali :Data Analysis
- Bakht-Jehan, Sajid Khan: Revisiting Critically
- Mumtaz Ali, Akram ullah :Final Approval of version