Epidemiologic Profile and Clinical Outcomes of Adult Patients with Prolactinoma at the Philippine General Hospital

Ma. Belen B. Pilit, MD,[1] Ma. Cecille Añonuevo-Cruz, MD[1] and Cecilia A. Jimeno, MD[1,2]

[1]*Division of Endocrinology, Diabetes and Metabolism, Department of Medicine, Philippine General Hospital, University of the Philippines Manila*
[2]*Department of Pharmacology and Toxicology, College of Medicine, University of the Philippines Manila*

ABSTRACT

Background and Objective. Prolactinoma is the most common functioning tumor of the pituitary gland. While its clinical course and outcomes among different populations have been vastly described in the past, data of prolactinoma among Filipinos has not been explored. This paper aims to describe the clinical profile and outcome of prolactinoma among adult Filipino patients.

Methods. We conducted a retrospective cohort study including 41 patients with prolactinoma seen at the Philippine General Hospital. The clinical profile, cranial imaging features, treatment modalities given, and their outcomes over a mean follow up of 16 months were evaluated.

Results. The mean age at diagnosis was 36.76 ±13.99 years. Majority of our cohort were females. Macroprolactinoma were found in 75.61% and giant prolactinoma in 9.76%. The remaining 12.2% were mixed GH and PRL secreting tumors. Most common symptoms at presentation were blurring of vision, headache, and amenorrhea. Median PRL levels was 353 (200-470) ng/ml. Medical therapy with Bromocriptine was the primary treatment modality used in 78% of patients. We found no significant difference between patients who underwent surgical and medical primary treatment modalities in terms of outcomes. At the end of follow up, 82.6 % of patients achieved at least more than 50% reduction in their prolactin levels.

Conclusion. Overall, our study showed that adult Filipino patients with prolactinoma have a larger tumor size at diagnosis and a lower rate of improvement of gonadal function after treatment. There were no statistically significant differences in clinical and biochemical outcomes between the treatment modalities used.

Keywords: prolactinoma, pituitary neoplasms, prolactin

eISSN 2094-9278 (Online)
Published: June 30, 2025
https://doi.org/10.47895/amp.vi0.10588

Corresponding author: Ma. Belen B. Pilit, MD
Division of Endocrinology, Diabetes and Metabolism
Department of Medicine
Philippine General Hospital
University of the Philippines Manila
Taft Avenue, Ermita, Manila 1000, Philippines
Email: mabelenpilithizon@gmail.com
ORCiD: https://orcid.org/0009-0009-1914-1392

INTRODUCTION

Prolactinoma is the most common hormonally active tumor of the pituitary gland. The presence of hyperprolactinemia accompanied with radiologic evidence of pituitary mass establishes the diagnosis of a prolactin-secreting pituitary tumor. It is usually benign but clinical course may vary, making it challenging to manage. It can also cause a wide variety of symptoms either due to local tumor mass effect or due to hyperprolactinemia.[1,2]

Based on the tumor size, prolactinomas are classified as microprolactinoma (tumors with a diameter of <1 cm), or macroprolactinoma (tumors with a diameter of ≥1 cm) Tumors with a diameter greater than 4 cm and a prolactin of atleast 1000 ng/ml are classified as giant prolactinoma.[3] Giant prolactinomas are rare, accounting for only 1 to 5% of

all the prolactinomas.[4] Microprolactinoma is more common in females while giant prolactinoma is more common in males. Macroprolactinoma, on the other hand, has no gender predilection.[2,4,5]

Dopamine agonists have been shown by most studies to effectively control tumor growth, improve symptoms, and normalize prolactin levels.[6-10] Thus, unlike other functioning pituitary tumor, the mainstay of treatment for prolactinoma, including giant prolactinoma, is primarily medical, with surgery and radiotherapy as alternative or adjunctive treatment modalities.[6]

The Endocrine Society Clinical Practice Guidelines recommends dopamine agonist for patients with symptomatic prolactinoma. Among the four dopamine agonists, cabergoline is recommended as the treatment of choice due to its greater efficacy in normalization of prolactin levels and reduction in tumor size, compared to the short-acting bromocriptine.[6]

However, despite the fact that consensus guidelines for the diagnosis and management of prolactinoma exist, there are still controversies concerning appropriate diagnosis and treatment of prolactinoma, such as the cut-offs for hyperprolactinemia, the choice of treatment methods, and the duration of drug treatment. Obstacles in the management of prolactinoma in our setting is the associated high cost of dopamine agonist and the unavailability of cabergoline hence, some patients continue to prefer surgery as primary therapy.

Furthermore, several international studies on the clinical profile and treatment outcomes of patients diagnosed with prolactinoma have been published.[5,11-13] However, similar data remains scarce in our local setting.

Presented with these challenges, we performed a retrospective analysis of prolactinoma patients seen at the outpatient clinic of the Philippine General Hospital.

OBJECTIVES

General Objective

To describe the epidemiologic profile and clinical outcomes of adult patients with prolactinoma seen in the Philippine General Hospital General Endocrine Outpatient Clinic.

Specific Objectives

1. To describe the clinical, laboratory, and sociodemographic characteristics of patients with prolactinoma.
2. To compare the outcomes of patients with prolactinoma undergoing medical and surgical treatment including tumor size reduction, normalization of prolactin levels, improvement of symptoms (i.e., resolution of infertility, improvement of visual field defect, resolution of amenorrhea, improvement of sexual function, and resolution of galactorrhea), recurrence rates, and length of disease-free survival.
3. To describe the complications of therapy or adverse reactions among the different treatment modalities.
4. To determine the incidence of postoperative complications among those who underwent surgery such as transient/permanent diabetes insipidus, meningitis, and CSF leak.
5. To analyze the indications for using second treatment modality among patients with prolactinoma (i.e., surgery after dopamine agonist use, dopamine agonist after surgery, radiotherapy after surgery).

METHODS

Study Design

This is a cross-sectional analytic study including 41 patients with prolactinoma seen at the Philippine General Hospital General Endocrine Outpatient Clinic between January 2009 and June 2020.

Inclusion Criteria

All patients more than 18 years old, with both biochemical and radiological evidence of prolactinoma were included in the study.

Exclusion criteria

Patients with other identified causes of hyperprolactinemia such as drug-induced hyperprolactinemia and patients with incomplete details in the clinical history and course of treatment or incomplete charts (i.e., no PRL levels recorded, mode of treatment not stated, or those patients who did not follow up after treatment) were excluded in the study.

Data Collection

The initial data of patients with prolactinoma were obtained from the census of the Division of Endocrinology, Diabetes and Metabolism. Outpatient census from 2009 to 2012, 2017 to 2020; and in-patient census from 2014 to 2020 were reviewed. OPD records from 2013 to 2016 were not available for review because of missing logbooks. Seventy-four cases of prolactinoma were identified. Screening for the inclusion and exclusion criteria was done. Outpatient charts of those patients who fulfill the inclusion criteria were retrieved from the Medical Records Section using their hospital case number. All charts were carefully assessed and documented. All charts with incomplete data were excluded. Details pertaining to investigations such as age, sex, presence of comorbidities, presenting signs and symptoms before and after treatment, laboratory parameters, treatment modality used, cranial imaging results (i.e., size of the tumor, presence of optic chiasm compression, invasion of the cavernous sinus) before and after treatment were recorded. (Figure 1)

Prolactinoma were classified according to their size: microprolactinoma (tumors with diameter less than 1 cm) and macroprolactinoma (tumors more than 1 cm). Tumors with diameter size of more than 4 cm and with prolactin levels of at least 1000 ng/ml were classified as giant prolactinoma. Tumors who meet the size cut off for giant prolactinoma but

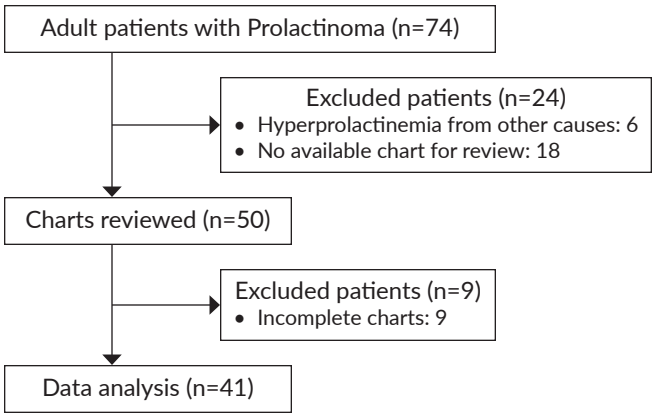

Figure 1. Data collection.

did not meet the prolactin levels of at least 1000 ng/ml were classified as macroprolactinoma. Prolactin levels at the initial consult, 1 month, 3 months, 6 months, 1 year, and at the end of last follow up were documented. Hormonal response to treatment was defined as normalization of prolactin levels or atleast 50% reduction from baseline. Radiologically, tumor size was compared from the initial consult and at the end of follow up. A significant tumor size reduction is defined as at least 50 % reduction from the baseline.

Clinical outcomes assessed were improvement of sexual function, and resolution of infertility,amenorrhea, gynecomastia, and galactorrhea at the end of follow up compared to initial consult. Improvement in sexual function was defined as increase in libido, or absence of impotence and erectile dysfunction while resolution of infertility was defined as occurence of pregnancy.

Statistical Analysis

Descriptive statistics was used to summarize the demographic and clinical characteristics of the patients. Frequency and proportion were used for categorical variables, median and inter quartile range for non-normally distributed continuous variables, and mean and standard deviation for normally distributed continuous variables. Independent Sample T-Test, Mann-Whitney U Test, and Fisher's Exact/ Chi-square Test were used to determine the difference of mean, rank, and frequency, respectively, between patients with and without outcome. Wilcoxon Signed Rank Test was used to determine the difference before and after treatment in terms of patient's prolactin values. All statistical tests were two tailed test. Shapiro-Wilk was used to test the normality of the continuous variables. Missing values were neither replaced nor estimated. Null hypotheses were rejected at 0.05α-level of significance. STATA 13.1 was used for data analysis.

RESULTS

Demographic and Clinical Profile

Among the 41 patients included in this study, majority were females. The mean age at the time of diagnosis was 36 (±13.99) years, ranging from 19 to 75 years. Eighty-one percent of our cohort were in the reproductive age group (15-49 years old). Mean tumor size at diagnosis was 3.54(±1.45) cm. Two thirds have macroprolactinoma while the remaining one third were composed of mixed GH and prolactin secreting prolactinoma and giant prolactinoma. Four patients were noted to have tumor size of more than 4 cm and baseline prolactin levels of more than 200 ng/ml, however no repeat prolactin with sample dilution was done hence these patients were not categorized as giant prolactinoma. Only one patient with microprolactinoma was included in the study. Median prolactin level was 353 ng/ml (200-470) at diagnosis. (Table 1)

Blurring of vision is the most common symptom at diagnosis. More than half of those patients who had blurring of vision had accompanying headache or vomiting. Amenorrhea or oligomenorrhea was present in 16 out of 21 (76%) women of reproductive age. Galactorrhea is the second most common symptom of prolactin excess, followed by infertility. Gynecomastia, on the other hand, was reported in four male patients. (Table 1)

Treatment

Sixty-eight percent of patients were given medical therapy with dopamine agonist as primary treatment while the remaining thirty-two percent were treated surgically. However, this includes the five cases of mixed GH and PRL-secreting prolactinoma in which surgical excision is the recommended mode of treatment. For purely PRL secreting adenoma, 78% were initially given medical therapy while 22% were treated surgically.

In the medically treated group, ninety-six percent of patients used the dopamine agonist, Bromocriptine. Only one patient was initially started on Cabergoline by a private doctor, however due to the limited availability in the Philippines and the associated cost of Cabergoline, this patient eventually shifted to Bromocriptine. Four patients had adverse events with Bromocriptine, with headache being the most frequently reported. Intolerance warranting discontinuation were only seen in 10% of those given Bromocriptine. Three out of the four patients who developed side effects were on Bromocriptine 2.5 mg per day. One patient who complained of vomiting was on Bromocriptine 10 mg per day. Eleven, out of the twenty-eight patients who were initially treated medically, underwent surgery. (Table 2)

In the surgically treated group, presence of visual field defects and patient's preference were the cited reasons for surgery. Trans-sphenoidal surgery was the surgical technique used in all patients for primary therapy. One patient who was referred for surgical management after treatment with Bromocriptine underwent craniotomy. One patient

Table 1. Demographic and Clinical Profile (n=41)

	Frequency (%); Mean ± SD; Median (IQR)
Age (years)	36.76 ± 13.99
Sex	
Male	13 (31.71)
Female	28 (68.29)
Diagnosis	
Macroprolactinoma	31 (75.61)
Giant prolactinoma	4 (9.76)
Microprolactinoma	1 (2.44)
Mixed GH and PRL	5 (12.2)
Months of follow up	16.5 (5 to 48)
Comorbidities	
Dyslipidemia	8 (19.51)
Hypertension	7 (17.07)
Diabetes mellitus	3 (7.32)
Impaired fasting glucose	3 (7.32)
Others	6 (14.63)
Symptoms at presentation	
Blurring of vision	28 (68.29)
Headache	24 (58.54)
Amenorrhea	16 (39.02)
Galactorrhea	9 (21.95)
Infertility	6 (14.63)
Gynecomastia	4 (30.76)
Decrease libido	3 (7.32)
Others	8 (19.51)
Prolactin (ng/ml)	
Before treatment	353 (200 to 470)
After treatment	161.7 (16.8 to 342.16)
P-value	0.003
Tumor size (cm)	3.30 ± 1.48
Primary treatment modality	
Surgical	13 (31.70)
Medical	28 (68.29)
Drug used	
Bromocriptine	27 (96.43)
Cabergoline	1 (3.57)
Any adverse events	4 (14.29)
Specify adverse drug reaction (n=4)	
Headache	2 (50)
Body weakness	1 (25)
Vomiting	1 (25)
Second treatment modality	17 (50)
Type of second treatment modality	
Surgical	11 (64.71)
Medical	6 (35.29)
Indication	
Non-adherence to meds	4 (9.75)
Intolerant to meds	3 (7.32)
Compressive symptoms	2 (5)
Resistant to meds	1 (2.44)
Pituitary apoplexy	1 (2.44)
Tumor residual/recurrence	5 (12.2)

developed both transient DI and CSF leak. Four cases of macroprolactinoma and one case of giant prolactinoma were started on Bromocriptine postoperatively because of incomplete resection. Presence of tumor invasiveness were identified in all of these patients.

Outcome

Out of the 41 patients that were analyzed for the epidemiologic profile, outcome assessment was done. Those patients with at least one repeat prolactin after primary treatment were included in the analysis of outcome. A total of 35 patients were analyzed.

After primary treatment modality, there was a significant reduction in the prolactin levels. Comparison of the patient's prolactin levels before and after 3 months, 6 months, 1 year, and at the end of follow up reached statistical significance. (Table 3)

At the end of follow up, normalization of prolactin levels was achieved in forty percent of patients. All patients except one who discontinued Bromocriptine during their course of treatment showed elevation of prolactin levels on follow up. Improvement in vision was seen in 43% of patients. Resumption of menses were reported in 33% of patients who had amenorrhea at diagnosis. Thirty-six percent of patients who presented with galactorrhea had resolution after treatment. Fifty-seven percent of patients showed improvement of sexual function on follow up. However, there was no improvement in infertility for most patients and only one successful pregnancy was reported. (Table 4)

In general, no statistically significant difference was found between medical and surgical treatment in terms of the normalization of prolactin levels at 3 and 6 months after treatment (Table 5) and improvement of clinical symptoms (Table 4).

Bromocriptine was discontinued in three patients. The first patient was on Bromocriptine for six years when the drug was withheld. This patient was off Bromocriptine for six months, however repeat prolactin levels showed elevated results accompanied with increase in the tumor size as documented by cranial imaging. The remaining two patients underwent surgical excision of tumor as initial management followed by repeat surgery for residual tumor and was maintained on Bromocriptine for 6 and 10 years, respectively when the Bromocriptine was discontinued. On follow up, one patient showed elevated prolactin levels with evidence of tumor recurrence on cranial imaging while the other patient had normal prolactin levels and is already off bromocriptine for two years at the time of last follow up.

Radiological assessment was done using cranial imaging (i.e., Cranial MRI, CT scan) within three months after treatment. Out of the 35 patients assessed for outcome, only 23 patients had cranial imaging results documented. Out of the 21 patients with macroadenoma, fifty-two percent were documented to have decrease in the tumor size. (>50% reduction in tumor size). Likewise, marked tumor size

Table 2. Treatment Modality Used according to Prolactinoma Type

	Prolactinoma			
	Macro (n=31, 75.6%)	Giant (n=4, 9.8%)	Micro (n=1, 2.4%)	Mixed GH and PRL (n=5, 12.2%)
	Frequency (%); Mean ± SD; Median (IQR)			
Primary treatment modality				
Surgical	6 (19.35)	2 (50)	0	5 (100)
Medical	25 (80.64)	2 (50)	1	0
Drug used				
Bromocriptine	24 (96)	2 (100)	1	-
Cabergoline	1 (4)	0	0	-
Surgical technique				
Transphenoidal	6 (19.35)	2 (50)	0	5 (100)
Craniotomy	0	0	0	-
With adverse drug reactions	4 (12.9)	-	-	-
Mild	1 (25)	-	-	-
Severe	0	-	-	-
Intolerance	3 (75)	-	-	-
Specify adverse drug reaction (n=4)				
Headache	2 (50)	-	-	-
Body weakness	1 (25)	-	-	-
Vomiting	1 (25)	-	-	-
Second treatment modality	16 (51.61)	1 (100)	0	-
Type of second treatment modality				
Surgical	11 (64.7)	0	-	-
Medical	5 (31.25)	1 (100)	-	-
Indication for second treatment modality				
Medical				
Tumor residual/recurrence	4 (12.90)	1 (25)	0	-
Surgical				
Non-adherence to meds	4 (12.9)	0	0	-
Intolerant to meds	3 (9.68)	0	0	-
Compressive symptoms	2 (6.45)	0	0	-
Resistant to meds	1 (3.22)	0	0	-
Pituitary apoplexy	1 (3.22)	0	0	-

Table 3. Prolactin Levels (ng/ml) before and after Primary Treatment

Time point	Observation	Median	IQR	*P*-value compared from the baseline
Baseline	36	373.40	203.5 to 701.4	-
3rd month	22	207.24	83.4 to 437	0.003
6th month	17	176.00	6.51 to 347	0.005
1st year	18	129.98	7.46 to 374	0.053
Last follow up	14	17.02	6.03 to 242	0.020

Table 4. Clinical Outcomes of Patients with Prolactinoma among the Different Treatment Modalities

	Valid observation	Primary treatment Modality			*P*-value
		Total	Surgical	Medical	
		Frequency (%)			
Improvement of sexual function	14	8 (57.14)	1 (33.33)	7 (63.64)	0.692
Resolution of infertility	14	1 (7.14)	0	1 (8.33)	1.000
Resolution of amenorrhea	18	6 (33.33)	1 (33.33)	5 (33.33)	0.735
Resolution of gynecomastia	4	1 (25)	1 (33.33)	0	1.000
Resolution of galactorrhea	11	4 (36.36)	0	4 (40)	1.000

Table 5. Prolactin Levels (ng/ml) among the Different Treatment Modalities

Time point	Observation	Surgical	Medical	*P*-value
		Median (IQR)		
Baseline	36	235 (100 to 3760)	410.15 (204 to 598)	0.620
3rd month	22	191.48 (2.57 to 480)	115 (77.2 to 365)	0.911
6th month	17	4.4	190 (35.8 to 353.3)	0.234
1st year	18	6.67 (2.1 to 11.23)	161.7 (26.83 to 465.3)	0.074
Last follow up	14	13.04 (1.4 to 23.34)	21 (9.16 to 299.87)	0.517

Table 6. Radiologic Assessment Post-treatment

	Prolactinoma		
	Total (n=23)	Macro (n=21, 91%)	Giant (n=2, 9%)
	Frequency (%)		
Imaging modality (after treatment)			
Cranial CT Scan	8 (34.78)	8 (38.10)	0
Cranial MRI	15 (65.22)	13 (61.90)	2
Results			
No significant interval changes (<50% tumor size reduction)	7 (30.43)	7 (33.33)	0
Decrease tumor size	12 (52.17)	11 (52.38)	1
Increase tumor size	1 (4.35)	1 (4.76)	0
With residual tumor post op	3 (13.04)	2 (9.52)	1

reduction was seen in all patients with giant prolactinoma (Table 6). Three patients presented with residual tumor after surgery on cranial imaging. Two out of the three patients with residual tumor post-operatively had cavernous tumor invasion at baseline imaging.

DISCUSSION

Prolactin-secreting tumor of the pituitary gland or prolactinoma, is the most common functioning pituitary tumor, accounting for 40 to 60 % of all clinically recognized pituitary adenoma.[14] In a study done in two tertiary centers in the Philippines, prolactinoma comprises majority of the functioning pituitary adenoma.[15,16] The prevalence varies with age and gender.[2,17] In our present study, majority of patients were females. This finding is similar with published reviews that among young adults, prolactinoma occur most frequently in females between 20 and 50 years old.[11,14,18] However, despite the fact that majority of our patients were females, only one patient with micro prolactinoma were included in the study which is in contrast with previously published studies that microprolactinoma are more common in females leading to earlier diagnosis. This is likely because PGH is a specialty referral center and most patients were already seen by other physicians, given initial management, and were only referred to PGH for continuity of care (i.e., surgery for those who were not amenable to medical therapy), warranting referral to specialty services (i.e., Endocrinology, Neurosurgery, Neuro-ophthalmology), or when symptoms worsen. Moreover, a higher incidence of 10% among those with giant prolactinoma was found in our study compared with previous published incidence of 1 to 5%. In fact, the true incidence of giant prolactinoma may still be underestimated in our present study since some of the cases who met the size cut off of 4 cm but do not have serum prolactin levels of more than 1000 ng/ml confirmed by sample dilution method were not classified as giant prolactinoma.

Serum prolactin levels usually correlate with tumor size. Macroprolactinomas are typically associated with levels above 250 µg/l, but these can exceed 1000 µg/l in some cases whereas giant prolactinomas is associated with prolactin levels above 1000 ng/ml and usually up to 100,000 ng/ml. Since patients included in our study were macroadenoma and giant macroadenoma, higher prolactin levels were documented. Nevertheless, prolactin levels may vary and there may be dissociation between tumor mass and prolactin levels.[4,7,12,19]

Unlike other functioning tumors of the pituitary, prolactinoma is the only pituitary tumor that can be initially managed medically. Dopamine agonists are the recommended first-line therapy for pharmacologic treatment of prolactinoma given its safety and efficacy in lowering prolactin levels and tumor size reduction leading to improvement or normalization of signs and symptoms of mass compression such as visual field cuts.[4,6-10,14]

Unfortunately, though, Cabergoline is not readily available in our country. Consequently, all patients included in our study used the locally available Bromocriptine. The results of our study reinforce the findings in other literatures that Bromocriptine, even at low doses, is successful in normalizing serum prolactin levels (43-70%) and tumor mass shrinkage.[8] However, among those that were given Bromocriptine in our cohort, only 37% achieved normalization of prolactin levels.

The lower efficacy of Bromocriptine seen in our study can likely be attributed to the level of adherence to medication since it was noted that three out of the seven patients who had less than 50% reduction of prolactin levels were non-adherent to Bromocriptine dopamine agonist therapy. The prolactin levels were also not stable for most patients. In our country, adherence to Bromocriptine is a challenge because of its cost. Some reportedly discontinued taking Bromocriptine or did not follow the prescribed dose of Bromocriptine along the course of their treatment due to financial limitations. Recurrence after drug withdrawal was high.

Interestingly, Bromocriptine has also been shown to be effective in tumor shrinkage of giant prolactinoma.[5,10] This finding was evident in all patients with giant prolactinoma in our study, which showed at least more than 50% reduction in prolactin level and marked reduction in the tumor size after Bromocriptine treatment. Prolactin levels normalization with Bromocriptine treatment is also associated with improvement of gonadal and sexual function.[20] However, lower rates of improvement on gonadal function were observed in our study.

Adverse effects associated with Bromocriptine are gastrointestinal, cardiovascular, and neurological manifestations. Nausea and vomiting are the frequently observed adverse effects occurring in up to 60% of patients. Intolerance to Bromocriptine were reported to be up to 20%. In contrast, Bromocriptine was reportedly well tolerated among our patients with only four out of the twenty-eight patients on medical therapy reported adverse events. Similarly, lower rate of drug intolerance and resistance was reported compared to published international data.[8] Thus, it is still the primary treatment used in the medical management of prolactinoma in our setting.

Surgery is only indicated for symptomatic patients who are intolerant or resistant to medical therapy and pituitary apoplexy.[15] In our setting, aside from these three indications, one of the cited reasons is the patient's desire for surgery because of the limiting cost of medical therapy. However, if cost will be the sole indication for surgery, the caveats are as follows: surgical success rates vary for micro and macroprolactinoma and is highly dependent on the neurosurgeon expertise; for invasive macroprolactinoma, surgery is rarely curative and patients will eventually resort to another treatment modality (i.e., medical or radiotherapy) thereby further increasing the cost of treatment.[21-23] Surgical remission rates, defined as normalization of prolactin levels, is achieved in 63% to 90% of microprolactinoma and 60% to 80% of macroprolactinoma in several studies.[22-24] A slightly lower surgical remission rate of 57% was observed in our study. Predictors of surgical remission observed in this study were invasiveness of the adenoma and presence of post-operative residual tissue. However, it is important to take note that those patients who were noted to have tumor residual, either by intraoperative inspection or documented by cranial imaging at the immediate post-operative period, where already started on medical treatment with Bromocriptine even before a repeat prolactin levels at six weeks were extracted. Hence, it is difficult to establish the true surgical remission rate in our current study. Furthermore, common surgical complications mentioned in some studies were not observed in our study.

A meta-analysis by Ma et al. comparing primary medical and surgical therapies for prolactinoma, showed that long term remission was achieved in 88% of patients initially managed surgically compared to 52% of patients on dopamine agonist therapy.[22] This was similar in the finding in our study that at 1 year of follow up, there was a significantly lower level of prolactin levels observed among those who underwent surgical excision compared to those given Bromocriptine. However, no statistically significant difference was found among the treatment modalities at the end of follow up. The relatively low number of patients given surgery as first-line treatment in this study potentially influenced the results of the study.

CONCLUSION

In conclusion, our study showed that prolactinoma among adult Filipino patients were more common in females and they tend to have a larger tumor size at diagnosis. Bromocriptine is the primary treatment used and appears to be well tolerated among Filipinos. A decreasing trends of prolactin levels after Bromocriptine treatment were noted suggesting possible treatment benefit. However, lower rates of resolution of amenorrhea, galactorrhea, and infertility were observed in our population compared with other racial groups, regardless of treatment modality used. Low post operative complications were reported among those who underwent surgery. Presence of tumor residual is the most common indication for using second treatment modality. Furthermore, non-adherence and intolerance to dopamine agonists were the frequently cited reasons for surgical management after medical therapy.

Limitations

However, our study has its limitations. The small sample size and the inherent limitations of a retrospective, single-center, and tertiary approach may limit the generalizability of the study treatment approach and outcome. Likewise, most of the patients were initially managed by other physician prior to consultation to our institution so PRL levels, as well as radiologic features, may already be affected with previous management received. Hence, our finding must be validated using a larger cohort in a multicenter setting.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

All authors declared no conflicts of interest.

Funding Source

None.

REFERENCES

1. Melmed S, Auchus R, Goldfine A, Koenig R, Rosen C. Williams Textbook of Endocrinology Fourteenth Edition 2020 (2):194-195
2. Prolactinoma.In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK459347/
3. Garla, V, Gosi, S, Palakodety, S, Kanduri, S, Kovvuru, K., Gunturu, M.,et al Giant Prolactinomas: Case Series and Review of the Literature. J Endocrinol Metab.2020;10(6):182-189.Available at: https://jofem.org/index.php/jofem/article/view/652/284284498
4. Shimon I. Giant Prolactinomas. Neuroendocrinology. 2019;109(1):51-56. doi: 10.1159/000495184
5. Almalki M, Aljohani N, Alzahrani S, Ahmad M, Alrashed A, Alshahrani F, et al. Clinical Features, Therapeutic Trends, and Outcome of Giant Prolactinomas. Clinical Medicine Insights: Endocrinology and Diabetes. 2020 Jun;(13):1-8. doi:10.1177/1179551420926181
6. Melmed S, Casanueva F, Hoffman A, Kleinberg DL, Montori V, Schlechte J, et al; Endocrine Society. Diagnosis and treatment of hyperprolactinemia: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2011 Feb;96(2):273-88. doi: 10.1210/jc.2010-1692
7. Casanueva F, Molitch M, Schlechte J, Abs R, Bonert V, Bronstein M,et al Guidelines of the Pituitary Society for the diagnosis and management of prolactinomas. Clin Endocrinol (Oxf). 2006 Aug; 65(2):265-73. doi: 10.1111/j.1365-2265.2006.02562.x.
8. Colao A, di Sarno A, Pivonello R, di Somma C, Lombardi G. Dopamine receptor agonists for treating prolactinomas. Expert Opin Investig Drugs. 2002 Jun;11(6):787-800. doi: 10.1517/13543784.11.6.787
9. Verhelst J, Abs R. Hyperprolactinemia: pathophysiology and management. Treat Endocrinol. 2003;2(1):23-32. doi: 10.2165/00024677-200302010-00003
10. Huang HY, Lin SJ, Zhao WG, Wu ZB. Cabergoline versus bromocriptine for the treatment of giant prolactinomas: A quantitative and systematic review. Metab Brain Dis. 2018 Jun;33(3):969-976. doi: 10.1007/s11011-018-0217-3
11. Malik S, Hussain S, Basit R, Idress N,Habib A,Zamant M et al. Demographic characteristics, presentations and treatment outcome of patients with prolactinoma: JAMC. 2014 Jul-Sep;26(3):269-274. PMID: 25671924.
12. Molitch M. Diagnosis and Treatment of Pituitary Adenomas: A Review. JAMA. 2017 Feb 7;317(5):516-524. doi: 10.1001/jama.2016.19699. PMID: 28170483
13. Ishtiaq O, Haq M, Rizwan A, Masood M, Mehar S, Jabbar A. Etiology, functional status and short term outcome of patients with pituitary lesions. An experience from a developing country. J Pak Med Assoc. 2009 Dec;59(12):839-43. PMID: 20201177.
14. Vroonen L, Daly A, Beckers A. Epidemiology and Management Challenges in Prolactinomas. Neuroendocrinology. 2019;109(1):20-27. doi: 10.1159/000497746. Epub 2019 Feb 7. PMID: 30731464.
15. Fonte J, Cunanan E, Matawaran, B, Mercado-Asis, L. Treatment Outcomes of Pituitary Tumors at the University of Santo Tomas Hospital: 2004-2008. Philippine Journal of Internal Medicine. 2010 July;47. 10.3860/pjim.v47i3.1654.
16. Villegas M, Guinto G, Quimpo J. A review of patients with pituitary tumors at St. Luke's Medical Center from January 1997 to September 2000. Philippine Journal of Internal Medicine, 2002 Jan; 40(1), 40-43
17. Kars M, Dekkers O, Pereira A, Romijn J. Update in prolactinomas. Neth J Med. 2010 Mar;68(3):104-12. PMID: 20308704
18. Ciccarelli A, Daly A, Beckers A. The epidemiology of prolactinomas. Pituitary. 2005;8(1):3-6. doi: 10.1007/s11102-005-5079-0. PMID: 16411062
19. Mancini T, Casanueva F, Giustina A. Hyperprolactinemia and prolactinomas. Endocrinol Metab Clin North Am. 2008 Mar;37(1):67-99, viii. doi: 10.1016/j.ecl.2007.10.013. PMID: 18226731.
20. Webster J, Piscitelli G, Polli A, Ferrari C, Ismail I, Scanlon M. A comparison of cabergoline and bromocriptine in the treatment of hyperprolactinemic amenorrhea. Cabergoline Comparative Study Group. N Engl J Med. 1994 Oct 6;331(14):904-9. doi: 10.1056/NEJM199410063311403. PMID: 7915824.
21. Massoud F, Serri O, Hardy J, Somma M, Beauregard H. Transsphenoidal adenomectomy for microprolactinomas: 10 to 20 years of follow-up. Surg Neurol. 1996 Apr;45(4):341-6. doi: 10.1016/0090-3019(95)00430-0. PMID: 8607082.
22. Ma Q, Su J, Li Y, Wang J, Long W, Luo M, et al. The Chance of Permanent Cure for Micro- and Macroprolactinomas, Medication or Surgery? A Systematic Review and Meta-Analysis. Front Endocrinol (Lausanne). 2018 Oct 25;(9):636. doi: 10.3389/fendo.2018.00636. PMID: 30410470; PMCID: PMC6209637
23. Primeau V, Raftopoulos C, Maiter D. Outcomes of transsphenoidal surgery in prolactinomas: improvement of hormonal control in dopamine agonist-resistant patients. Eur J Endocrinol. 2012 May; 166(5):779-86. doi: 10.1530/EJE-11-1000. Epub 2012 Feb 2. PMID: 22301915
24. Han Y, Chen D, Zhang C, Pan M, Yang X, Wu YG. Retrospective analysis of 52 patients with prolactinomas following endoscopic endonasal transsphenoidal surgery. Medicine (Baltimore). 2018 Nov;97(45):e13198. doi: 10.1097/MD.0000000000013198. PMID: 30407358; PMCID: PMC6250442.