Clinical Presentations of Pituitary Adenomas at a University Hospital in Jamaica

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Abstract

Pituitary tumors account for approximately 10-15% of primary brain tumours worldwide. It is important for clinicians be familiar with the varied modes of presentation since favorable therapeutic outcomes depend on an early diagnosis. We sought to document the clinical presentation in patients with pituitary tumours. Methods:We performed a retrospective analysis of hospital records from all patients with pituitary tumours treated over 15 years from January 1989 to June 2005. The information collected included patient demographics, duration of symptoms, presenting clinical features, visual field testing and hormone assays. Data were analyzed using SPSS version 12.0. Results:Pituitary tumours were present in 119 patients, with a 1:1.6 male to female ratio. There were 73 females and 46 males, who presented at a mean age of 45.4 years (SD +/-14.8; Range 10-79; Median 45; Mode 45).Non-functional tumours were present in 55% of patients at a mean age of 50.8 years (SD +/-13.4; Median 51; Mode 63) while patients with hormonally active tumours presented earlier at a mean age of 39.2 years (SD +/-13.9; Median 38; Mode 45).Visual disturbances were present in 80.7% of patients with hormonally inactive tumours, and included field deficits (79.1%) and abnormal acuity (92.5%). The other non-hormonal presentations included non-specific headaches (72.3%), cranial nerve palsies (16%) and pituitary apoplexy (5%).The commoner endocrine presentations included hyper-prolactinemia (24.4%), amenorrhoea (21.9%), hypothyroidism (7.6%), acromegaly (5.9%), cushing's disease (4.2%) and hyperthyroidism (0.8%). Conclusion:Most patients present relatively late because the majority of pituitary tumours are hormonally inactive. Visual disturbances, headaches and symptoms of hyper-prolactinemia are common presenting complaints. Heightened clinical vigilance and early investigation in patients with suggestive clinical presentations may improve the results of treatment of this common disorder.

INTRODUCTION

Pituitary tumors are relatively common neoplasms, accounting for approximately 10-15% of all primary brain tumours [123] . The prevalence of pituitary tumours at the University Hospital of the West Indies (UHWI) in Jamaica is comparable to international reports [34567] . Autopsy studies at the UHWI have revealed that asymptomatic pituitary adenomas occur in 10% of unselected subjects [4] .

It is important for clinicians be familiar with the varied modes of clinical presentation since favorable therapeutic outcomes depend on an early diagnosis. In order to increase clinician awareness, we sought to document the presenting clinical features in patients diagnosed with pituitary tumours over 15 years in this setting.

METHODS

The UHWI is a 500-bed tertiary referral center in Kingston, Jamaica with seven operating theatre suites and two eight-bed multidisciplinary Intensive Care Units. This centre serves as a referral centre for patients diagnosed with intra-cranial tumours who require neurosurgical intervention.

We retrospectively examined admission records from the UHWI over a period of 15 years from January 1989 to June 2005. Hospital records of all patients treated for pituitary tumours were retrieved, the relevant data extracted and entered in a Microsoft Excel worksheet. The information collected included patient demographics, duration of symptoms, presenting clinical features, visual field testing and hormone assays. Visual field examinations were performed using perimetry and visual analyzers. Data were analyzed using SPSS version 12.

RESULTS

Over the study period there were 119 patients treated at the UHWI with pituitary tumours. There was a 1:1.6 male to female ratio, with 73 (61.3%) females and 46 (38.7%) males. These patients presented at a mean age of 45.4 years (SD

+/-14.8; Range 10-79; Median 45; Mode 45). At the time of diagnosis, 31 (30.4%) patients had co-morbid illnesses, most commonly hypertension (34.3%) and diabetes mellitus (9.8%).

The most common presenting symptoms in these patients were visual disturbances and non-specific headaches. Table 1 outlines the remaining presenting symptoms.

Figure 1

Table 1: Clinical Presentation of Patients with Pituitary Tumours at the UHWI

Presentation	Number	Percentage
Visual disturbance	96	80.7%
Headache	86	72.3%
Amenorrhoea	26	21.9%
Galactorrhoea	23	19.3%
Cranial nerve palsy	19	16.0%
Pituitary apoplexy	6	5.0%

The results of visual acuity and visual perimetry testing were reported in 67 of 119 patients (Table 2). Almost 80% of tested patients had visual field defects, most commonly bitemporal hemianopsia. The majority of patients also had disturbances in visual acuity. Many patients were legally blind at the time of presentation, with a visual acuity of 20/200 or worse.

Figure 2

Table 2: Visual Acuity in patients with Pituitary Tumours

Visual status (n=67)	Number	Percentage
Normal visual acuity	5	7.5%
20/25 - 20/100	29	43.3%
20/200 – NLP	25	37.3%
Visual field defect	53	79.1%
Optic Atrophy	34	50.7%

Hormonal assays were routinely performed as a part of the pre-surgical work-up and revealed that the majority (55.5%) of pituitary tumours had no endocrine activity (Table 3). Patients with non-functional tumours presented at a mean age of 50.8 years (SD +/-13.4; Median 51; Mode 63) while patients with hormonally active tumours presented earlier at a mean age of 39.2 years (SD +/-13.9; Median 38; Mode 45).

Figure 3

Table 3: Clinical Presentation of Patients with Pituitary Tumours at the UHWI

Endocrine Activity	Number	Percentage
Non-functional Tumours	66	55.5%
Hormonally Active Tumours	53	44.5%
Hormonal Excess		
• Hyper-prolactinemia	29	24.4%
• Acromegaly	7	5.9%
• Cushing's disease	5	4.2%
• Hyper-thyroidism	1	0.8%
Hormonal Defficiency		
• Hypo-thyroidism	9	7.6%
• Low testosterone	2	1.6%

DISCUSSION

Pituitary tumours are common in this setting where it accounts for 15% of all primary intracranial tumours [5] and 10% of unselected autopsy studies [4] . It is important for clinicians be familiar with their presentation since favorable therapeutic outcomes are dependent on making an early diagnosis.

The incidence of pituitary tumours has been reported to be greatest in young adults [89] . The mean age at which a pituitary tumour was diagnosed in our setting was 45.4 years and this is in keeping with the medical literature [89] . Pituitary tumors are uncommon in children, accounting for less than 2% of all paediatric tumours [24] . The incidence is similar in our setting, with only 3.4% (4) occurring in patients less than 18 years of age. The youngest patient in our study was a 10 year-old male with a macro-prolactinoma.

Previous local data suggested that pituitary adenomas are equally distributed in males and females [5] . We found a slight male preponderance with a 1:1.6 male to female ratio noted in our series.

In this modern era, it has become increasingly common for the diagnosis to be made incidentally during brain imaging for another purpose. There were no incidentally discovered tumours noted in this series. All diagnoses were made in symptomatic patients who presented with symptoms of mass effect or endocrine abnormalities. This may reflect the relative unavailability of imaging in this developing nation [10] .

In this series, 55.5% of the tumours were non-functioning adenomas and this was consistent with other reports [1112] . It

was notable that the patients with non-functional adenomas presented a decade later than patients with hormonally active tumours. This is because non-functional tumours are usually detected relatively late due to a paucity of clinical symptoms [13] . These patients are only detected when consequences of mass effect (hypo-pituitarism; chiasmal compression; pituitary apoplexy) become evident.

Visual disturbance was the commonest symptom reported in our setting (>80%). This reflects the anatomy of the sellar region where the optic chiasm can be compressed against the adjacent tuberculum sellae [114] . Chiasmal compression commonly leads to impaired visual acuity and bi-temporal visual field defects. However, ocular findings may be variable because the optic chiasm is less amenable to compression when it is located anterior (pre-fixed) or posterior (post-fixed) to the tuberculum sellae.

Our series was typical, with visual field defects in 79% of patients. Most patients presented with the hallmark abnormalities of chiasmal compression: superior bi-temporal quadrantopsia and bi-temporal hemianopsia. More than 90% of the patients presented with impaired visual acuity and over 50% had signs of optic atrophy on ophthalmologic examination. These findings are in keeping with other reports [14] . Due to the nature of this study we could not comment on the presence of other common optic signs, such as impaired pupillary reflexes and bi-temporal hemi-achromatopsia.

Tumour growth may lead to pressure atrophy of viable endocrine cells in the normal gland leading under-secretion of pituitary hormones (hypo-pituitarism). Hormonal deficiency was uncommon in our setting, with less than 10% of patients having biochemically confirmed deficiencies. Hypothyroidism was the commonest hormone under-secreted and when present produced characteristic clinical features. The two males with gonadotrophin deficiencies did not admit to impaired libido or impotence.

Hypo-pituitarism can also occur acutely after haemorrhage from the tumour into the pituitary gland. This leads to a sudden deterioration with confusion, headache and impaired consciousness (pituitary apoplexy). Pituitary apoplexy was the mode of presentation in 5% of patients in our setting. This is a lethal complication that requires emergent management. There were no reports of deaths from pituitary apoplexy in this setting.

Hormonally active tumours presented a decade earlier due to the associated clinical syndromes. The clinical syndromes produced were dependent on the specific hormones over-produced by tumour cells. In keeping with other reports, the commonest tumour syndromes in our setting were due to over-production of prolactin, growth hormone and ACTH [15161718] .

Hyper-prolactinemia was the commonest endocrine abnormality (24.4%). These patients presented relatively early at a mean age of 37.2 years with amenorrhoea (89.7%) and galactorrhoea (79.3%) as the commoner presenting complaints.

Growth hormone was the second commonest hormone overproduced. There were no reports of pituitary gigantism that occurs when growth hormone excess occurs in children and adolescents. There was acromegaly in two males and three females with ages ranging from 27 to 46 years (mean 39.6; SD +/- 7.7; Median 43; Mode 46). These patients exhibited the characteristic morphologic changes that included enlarged hands and feet, frontal bossing, prognathism, coarsened voice and hirsutism. Although diabetes is an associated feature in up to 20% of patients with acromegaly [16] , it was only present in one patient in this series. Due to the method of data collection, it was not possible to determine the presence of sleep apnoea, acromegalic cardiomyopathy, carpal tunnel syndrome, acromegalic myopathy or lumbar canal stenosis, all of which are recognized to be commoner in individuals with acromegaly [16] .

Cushings Disease is a common syndrome encountered due to excess production of ACTH from the pituitary adenoma. The incidence of Cushing's disease as a presentation of pituitary adenomas in our setting was low, with biochemically confirmed hyper-cortisolism in 4.2% of cases. Cushing's disease occurred in our setting at a mean age of 33.2 years with a 5:1 female preponderance. This is in keeping with other reports in the medical literature [18] . The patients experienced classic symptoms of weight gain, centripetal obesity, moon facies, violet striae, easy bruisability, proximal myopathy, and psychiatric changes.

CONCLUSION

Pituitary tumours in this setting are common. Most patients present relatively late because the majority of pituitary tumours are hormonally inactive. The clinician should be aware of the methods of clinical presentation in order to make an early diagnosis.

Visual disturbances, headaches and symptoms of hyper-prolactinemia are common presenting complaints. Heightened clinical vigilance and early investigation in patients with suggestive clinical presentations may improve the results of treatment of this common disorder.

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