

HYPERPROLACTINEMIA IN CHILDREN AND ADOLESCENTS: A REVIEW OF PATIENTS PRESENTING TO A TERTIARY CENTER IN AUSTRALIA



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Introduction

Prolactin is a peptide hormone secreted by the lactotroph cells of the anterior pituitary. Prolactin homeostasis is the result of a complex balance between negative and positive stimuli from both an endogenous and exogenous environment. Dopamine exerts the main inhibitory physiologic control of prolactin secretion (1).

Hyperprolactinemia is relatively rare in childhood and poorly described in the literature.

It can result from a physiological, pathological or pharmacological cause. It represents a diagnostic dilemma as it is often encountered in the absence of pathology in children and adolescents (2).

Regardless of etiology, hyperprolactinemia can present with menstrual disturbance, galactorrhea, delayed puberty or it may remain asymptomatic (3).

Aim

The aim of this study was to retrospectively evaluate the etiology, clinical findings and management of hyperprolactinemia in paediatric patients.

Method

We reviewed the records of 90 children with hyperprolactinemia presenting to the Children's Hospital at Westmead between 2009 and 2014. Hyperprolactinemia was defined as Prolactin level >760 mU/L.

We also identified 6 patients with undetectable prolactin level defined as Prolactin level <10.6 mU/L.

Data collected include:

- ❖ Age, gender, anthropometric data,
- ❖ Clinical symptoms, pubertal status,
- ❖ Pituitary hormone profile,
- ❖ Prolactin level,
- ❖ MRI brain,
- ❖ Etiology,
- ❖ Management details.

Results

| | Male, n = 44 | Female, n = 46 |
|--------------------------|--------------|----------------|
| Age | 8.55 ± 6.08 | 10.3 ± 6.46 |
| Weight SD | 0.51 ± 1.75 | - 0.15 ± 1.7 |
| Height SD | -0.66 ± 1.72 | - 0.72 ± 1.69 |
| BMI | 22.88 ± 5.29 | 20.8 ± 5.33 |
| BMI SD | 1.01 ± 1.36 | 0.26 ± 1.34 |
| Symptomatic/asymptomatic | 7/37 | 7/39 |

Table 1: Auxological data of hyperprolactinemia patient (mean ± SD)

| | Prolactin level mean ± SD (range) |
|-----------------------------------------------|----------------------------------------|
| Total group | 1710 ± 2227 mU/L (761 to 20,288 mU/L) |
| Male | 2092 ± 2251 mU/L (767 to 20,288 mU/L) |
| Female | 1344 ± 1043 mU/L (761 to 3413 mU/L) |
| Patients with pituitary adenoma | 7968 ± 3507 mU/L (1660 to 20,288 mU/L) |
| Patients with drug induced hyperprolactinemia | 1452 ± 806 mU/L (761 to 3922 mU/L) |

Table 2: Prolactin levels of hyperprolactinemia patient (mean ± SD)

| Age | Gender | Clinical Presentation | Co-morbidities | PRL mU/L | MRI | Treatment | Complication |
|------|--------|----------------------------------------------------------------|----------------|----------|---------------------------------------------|--------------------------------|---------------------------------------------------------------------------------|
| 13.1 | M | Headache Vomiting Delayed Puberty Visual Field defect | Nil | 20,288 | Pituitary giant Macroadenoma (4 x 4 x 3 cm) | Surgery Post-op Cabergoline | Post-op CSF leak Residual tumor MPHD (TSH, GH & Gonadotrophin deficiency) |
| 13.7 | F | Amenorrhea Galactorrhea Visual disturbance | Nil | 2459 | Pituitary microadenoma (4 x 5 x 6 mm) | Medical Cabergoline | None |
| 16 | F | Irregular periods Galactorrhea Headache | Morbid obesity | 1660 | Pineal cyst (15 x 9 x 12 mm) | Medical Cabergoline | None |
| 14.1 | M | Headache | Nil | 7467 | Pituitary adenoma | Surgery | Lost to f/up |

Table 3: Patients with Pituitary adenoma

Symptom frequency:

- ❖ The majority of patients (84%) were asymptomatic and were identified on blood tests done during drug therapy or for other reasons.
- ❖ In the symptomatic group; headache (n=5), visual disturbance (n=3), galactorrhea (n=3), gynecomastia (n=2), pubertal delay (n=6), and menstrual irregularity (n=3) were reported.
- ❖ 14/90 patients were symptomatic: 4 pituitary adenoma, 4 hypothalamic pituitary dysfunction, 2 anti-psychotic agents and 4 unknown cause.

MRI findings:

- ❖ MRI brain reports were available for 46 patients out of which 30 patients had abnormal findings; 16 had an MRI abnormality thought to be responsible for the hyperprolactinemia and in 14 patients the MRI abnormality was thought to be unrelated to hyperprolactinemia.

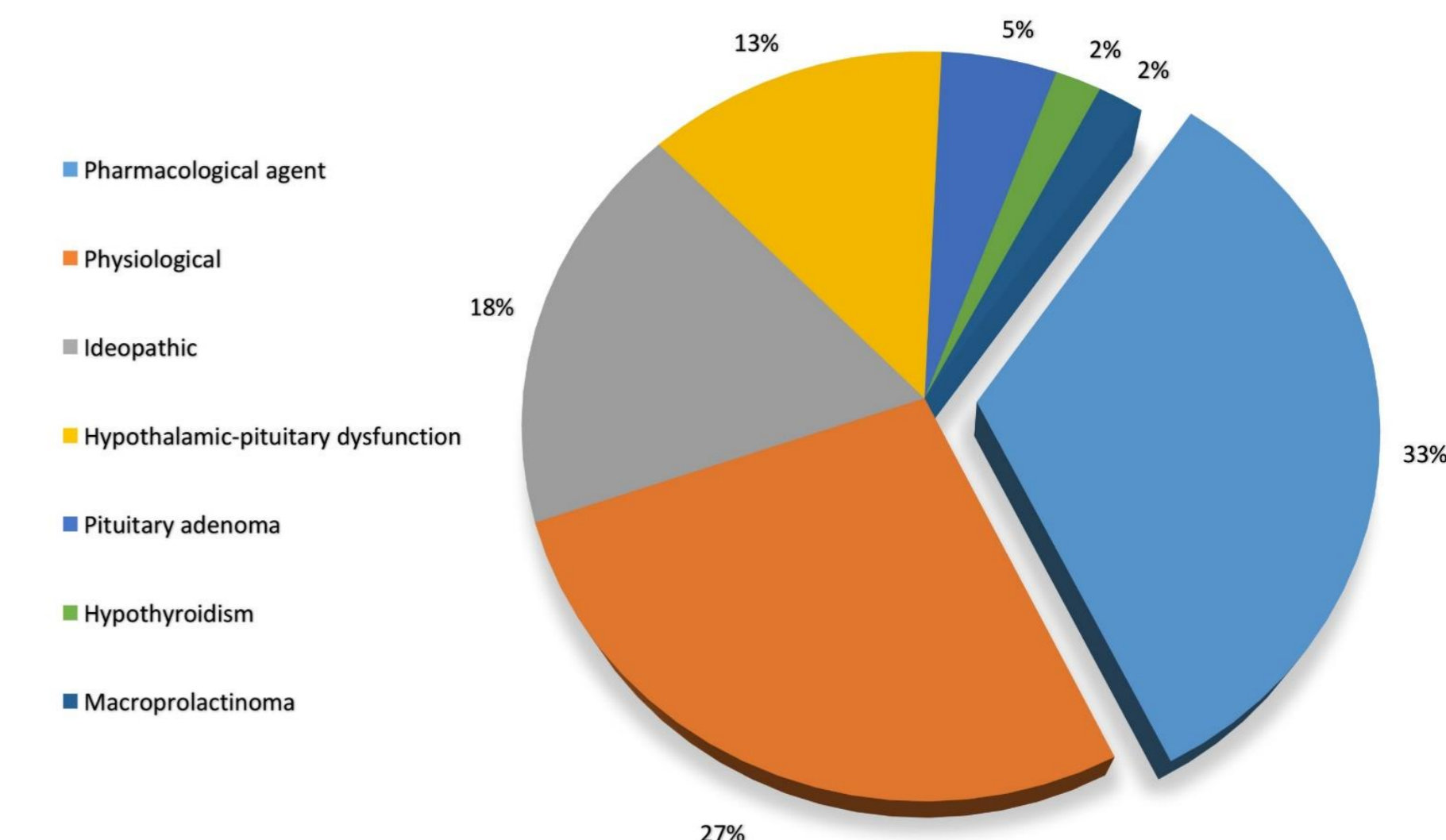


Figure 1: Etiology of hyperprolactinemia

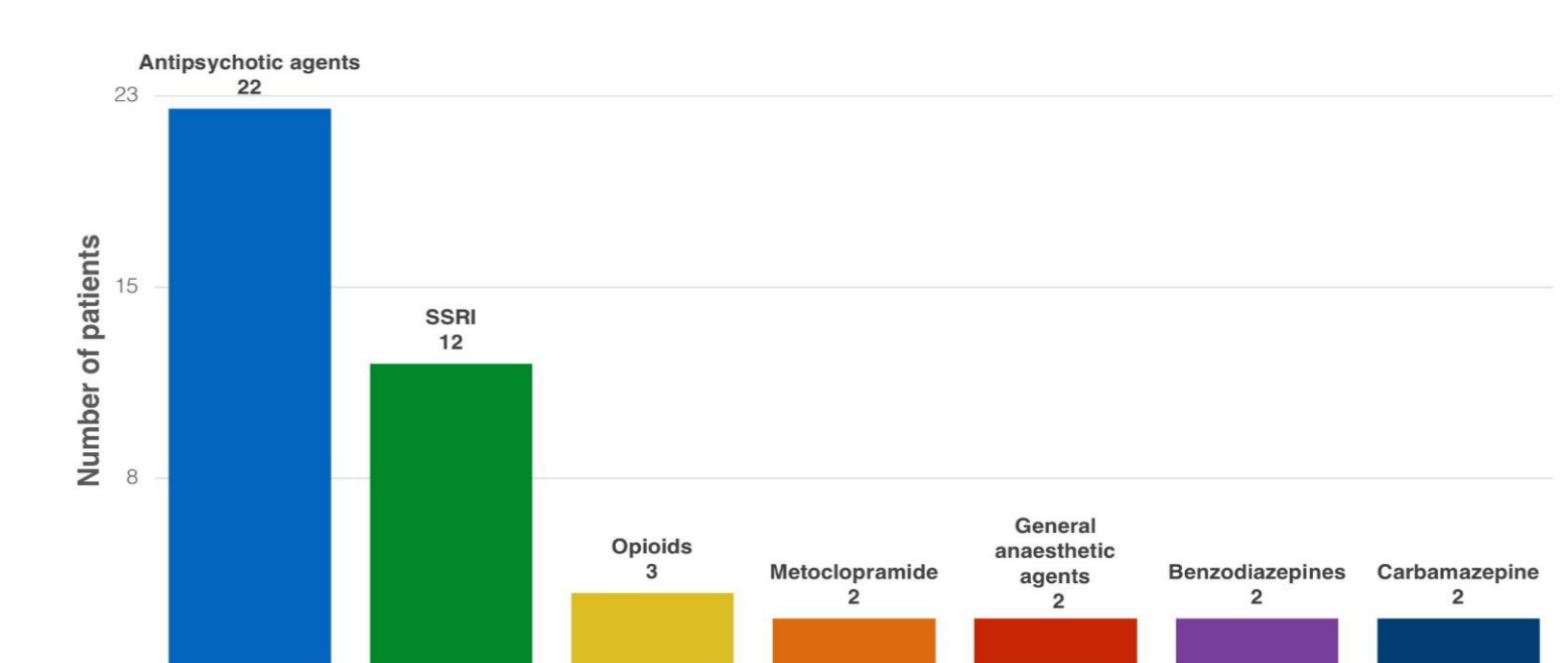


Figure 2: Pharmacological drugs causing hyperprolactinemia

- ❖ Risperidone was the commonest drug responsible for the hyperprolactinemia (n=19).

Undetectable Prolactin level:

6 patients were identified to have PRL <10.6 mU/L, age range 1 to 16 year, 4/6 males, 2 secondary to Aripiprazole, 2 associated with hypopituitarism and 2 idiopathic in nature.

Conclusion

- ❖ Childhood hyperprolactinemia is rare in general practice but it is relatively frequent reason for referral to tertiary endocrine services and deserves a careful evaluation.
- ❖ Hyperprolactinemia presents mainly in late childhood and patients are often asymptomatic.
- ❖ Drug induced hyperprolactinemia was the most common cause of hyperprolactinemia in children presenting to our tertiary service.
- ❖ Based on our experience, children with hyperprolactinemia should be investigated further if they are symptomatic or have prolactin levels >1500 mU/L.

References

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