Prevalence of organic lesions in males with central precocious puberty. 
Stefania Pedicelli1, Sara De Matteis2, Giuseppe Scirè2, Marco Cappa1 and Stefano Cianfarani2,3
1Unit of Endocrinology and Diabetes, "Bambino Gesù" Children's Hospital, IRCCS, Rome, Italy
2Molecular Endocrinology Unit, "Bambino Gesù" Children's Hospital-Tor Vergata University, Rome, Italy
3Department of Women's and Children's Health, Karolinska Institutet, Stockholm, Sweden

Disclosure statement: nothing to disclose

Background

Organic lesions in males with central precocious puberty (CPP) have been reported in 40% of cases. This high prevalence decreases to 20-29% when patients with previously diagnosed alterations of central nervous system (CNS) are excluded. Reported predictors of organic lesions are age at puberty onset, bone age, BMI, LH peak response and testosterone levels.

Objectives

1. to determine the prevalence and type of intracranial lesions in males with CPP
2. to identify clinical and biochemical predictors of brain abnormalities.

Methods

All males diagnosed with CPP at a tertiary pediatric center, through pubertal gonadotropin response to a GnRH stimulation test, were included. Patients with known CNS alterations, genetic syndromes or known endocrine disorders were classified as having secondary CPP (sCPP); the remaining as isolated CPP (iCPP).

All patients underwent hypothalamus-pituitary MRI and the findings were classified as: normal, incidentalomas or organic lesions.

Results

64 boys were included in the study; iCPP was diagnosed in 78.1% of cases (50/64). sCPP patients had congenital adrenal hyperplasia (n=3), adrenal insufficiency (n=1), previous ependymoma (n=1), epileptic herpetic encephalopathy (n=1), hydrocephalus (n=1), hypothalamic dysfunction (n=1), type 1 neurofibromatosis (n=1), X-fragile syndrome (n=1), Prader-Willi syndrome (n=1), Fryns syndrome (n=1) and other genetic syndromes (n=2).

The comparison between iCPP and sCPP showed that iCPP patients had higher height SDS at diagnosis (p=0.014), higher BMI SDS (p=0.037) and lower prolactin levels (p<0.001), probably related to the underlying diseases in sCPP patients.

iCPP males showed normal MRI in 78% of cases (39/50), incidentalomas in 10% (5/50) and organic lesions in 12% (6/50).

<table>
<thead>
<tr>
<th>Lesions</th>
<th>iCPP</th>
<th>sCPP</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidentalomas</td>
<td>Pituitary hypoplasia (n=3)</td>
<td>Lipoma of the tuber cinereum (n=1)</td>
<td>Ectopic neurohypophysis (n=1)</td>
</tr>
<tr>
<td>Organic lesions</td>
<td>Pituitary microadenoma (n=3)</td>
<td>Hypothalamic hamartoma (n=2)</td>
<td>Gangliogioma (n=1)</td>
</tr>
<tr>
<td></td>
<td>Glioma (n=1)</td>
<td>Ependymoma (n=1)</td>
<td></td>
</tr>
</tbody>
</table>

As 2 of 3 microadenomas were not confirmed at a second evaluation and this type of lesions are often considered incidentalomas in pediatric population with CPP, after their exclusion the prevalence of organic lesions decreased to 6% (Fig.1).

No predictive parameter of organic lesions was found. Radiological follow-up of the organic lesions showed no evolution after 2-years follow-up.

Conclusions

In males with CPP the prevalence of organic lesions is lower than previously reported after excluding patients with known predisposing conditions.

![Figure 1](image-url)