ENDOCRINOPATHY IN CHILDHOOD INTRACRANIAL GERM CELL TUMOURS IS PREDICTED BY DISEASE LOCATION NOT TREATMENT
32 YEAR EXPERIENCE FROM A SINGLE TREATMENT CENTRE

Joana Serra Caetano1, Efthychia Dimitrakopoulou1, Ash Edie1, Kim Phipps1, Sara Stoneham1, Miguel Patrício1, Helen Spoudeas3
Department of Neuroendocrinology and Late Effects2, Neuroradiology3 and Neuroendocrinology3 at Great Ormond Street and University College Hospitals, London, UK;
Laboratory of Biostatistics and Medical Informatics and IBIU, Faculty of Medicine, University of Coimbra, Portugal1

INTRODUCTION
- Childhood Intracranial Germ Cell Tumours (IGCT) are rare malignant tumours of the pituitary stalk and pineal region which are generally highly curable (>90%) by neauraxial radiation alone
- International trials have aimed to decrease late radiation-induced neuroendocrine morbidity by decreasing radiation volume and/or substituting chemotherapy (CT), without compromising survival
- Tumour location, especially in the suprasellar position, is arguably more important to neuroendocrine outcomes, although these are not always routinely assessed at diagnosis with dynamic tests
- Without longitudinal studies, disease and treatment contributions to long term outcomes remain unknown

PURPOSE
- To determine long term neuroendocrine morbidity in intracranial Germ Cell Tumours and define tumour and treatment-related factors. Is endocrinopathy disease or treatment-related?

MATERIAL AND METHODS
- Retrospective longitudinal analysis of IGCTs registered in our joint centre (UCL/GOH) and confirmed by MRI and/or histopathology, between 1.1.1983 and 31.12.14 (32 years).
- Search on both our local endocrine late effects database and central electronic patient records using the terms: “germ cell tumours”/“germinomas”?/“non germinomatous germ cell tumours” and “Central Nervous System”?/“intracranial”
- Tumour 3D volume was assessed using novel software ITK-SNAP v3.2.0. Statistical analysis was done with SPSS 21.0 using non parametric tests (Mann-Whitney U and exact Fisher tests were used for inter group comparison of quantitative and qualitative variables respectively), and data presented as medians and quartiles. McNemar tests were used to assess evolution of endocrinopathies with time subsequently expressed as survival curves (Figure 6).

RESULTS
- 76 patients with intracranial GCTs, 5 excluded for missing data
- 71 patients included

TREATMENT
- Surgical intervention 61/71 (85.9%)
  - 11/59 (18.6%) Only biopsy
  - 12/59 (20.4%) Ventriculostomy+IP shunt
  - 6/59 (10.2%) Debunking
  - 20/59 (33.3%) Subtotal resection
  - 10/59 (16.9%) Complete resection
- Radiotherapy 56/71 (81.7%)
- Chemotherapy 27/71 (38%)

TREATMENT modalities
- Biopsy 26/71 (36.6%)
  - Only surgery 10/70 (14.3%)
  - Surgery+RT 27/70 (38.6%)
  - Surgery+CT 27/70 (38.6%)
  - Surgery+RT+CT 17/70 (24.3%)
  - RT+CT 8/70 (11.4%)
  - Only CSI 6/70 (8.6%)

Evolution of endocrinopathies
- Endocrinopathy
  - Yes
  - No
  - p-value
  - Major minor surgery 24/23 5.2 0.431
  - Radiotherapy (yes/no) 48.4 6.1 0.494
  - Chemotherapy (yes/no) 21/29 2.5 0.689
  - Relapse (yes/no) 6.44 2.5 0.262

CLINICAL PRESENTATION

SUMMARY AND CONCLUSIONS
- Pinnacle tumours present earlier than suprasellar despite smaller volume disease, due to raised intracranial pressure, whilst the latter developing occult endocrinopathy (often GHD) typical of the area
- Endocrinopathies are frequent at diagnosis (89%), especially in suprasellar, and evolve hierarchically to include multiple deficits (89%), but do not differ between treatment groups in which surgical resection is equally prevalent
- Surgical resection tends to increase endocrine deficits (without reaching significance) and needs longitudinal study
- The majority of clinical symptoms (51%) and require extra surgical support

Evolution of endocrinopathies

1. Endocrinopathies are predicted by disease location rather than imposed by radiation, and possibly escalated by rescue surgery; 2. All patients should be routinely assessed at diagnosis for occult endocrinopathy, especially GHD and followed prospectively; 3. Substituting ventricular irrigation and adjuvant chemotherapy for neuroaxial (CSI) radiotherapy does not avoid these morbidities

REFERENCE

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