DAVID syndrome\(^1\) (Deficit in Anterior Pituitary Function and Variable Immune Deficiency) is a rare condition combining anterior pituitary deficiencies and common variable immune deficiency (CVID). It can be caused by NFKB2 mutations\(^2\,^3\).

All patients described so far have an orthotopic posterior pituitary (PP) and most only ACTH deficiency.

To describe a girl with common variable immunodeficiency (CVID), ectopic PP (EPP) and multiple pituitary hormone deficiencies, and to demonstrate genetic heterogeneity of DAVID syndrome.

Clinical presentation at age 17 y:
- Unexplained intellectual disability
- Glomerulonephritis → Dx: CVID\(^4\).
- Endo consult for 1\(^{st}\)y amenorrhea
- Tanner B2P1
- Height 165 cm (target 165-182)

Imaging:
- US: uterus small, ovaries normal.
- Hand X-ray: epiphyses fused.
- MRI: EPP, thin stalk and small anterior pituitary (Fig 1).

Baseline labs:
- Cortisol: < 11.1 nmol/L
- DHEAS: < 0.5 µmol/L
- ACTH: 0.8 pmol/L
- \(fT_4\): 9.2 pmol/L
- IGF-I: < 3.2 pmol/L

Pituitary function testing:
- LHRH:
  - LH: 3.2 to 28.8 mUI/L
  - FSH: 5.3 to 13.5 mUI/L
- TRH:
  - TSH: 7.2 to 31.2 mUI/L at 30 min. and still high at 90 min. (15.5 mUI/L)
  - PRL: 10.4 to 45.2 µg/L at 10 min.
  - peak GH after arginine: 0.02 µg/L.

Treatment: cortisol & estrogens

Evolution: between 17 and 20 y, BMI increased from 24 to 31 kg/m\(^2\).

Genetic investigation:
- NFKB2 (Fig. 2): normal.
- Exome sequencing: potentially disease-causing variant in one of the genes of the NFKB pathway (Fig. 3).

In addition to the cardinal features of DAVID syndrome (CVID and severe ACTH deficiency), our patient has severe GHD and hypothalamic hypogonadism. In contrast to all patients with DAVID syndrome reported so far, she has an EPP, suggesting developmental, rather than autoimmune, endocrine deficits.

DAVID syndrome is clinically and genetically heterogeneous. While a search for an alternative genetic etiology is underway, we suggest describing our patient’s condition as GOLIATH syndrome: GHD, Obesity, Low IQ, IgG and ACTH deficiency, Triad and Hypogonadism.

References
1. Quentien et al. JCEM 97:E121, 2012
2. Chen et al. AJHG 93:13, 2013

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