The congenital central hypothyroidism (CCH) incidence is estimated at 1:18,000-30,000 neonates and most are included in multiple pituitary deficiencies (MPD). Clinical depend on the etiology, the deficit severity; other associated hormonal alterations and the age of diagnosis. Neonatal screening (NS) for congenital hypothyroidism that includes T4 facilitate its diagnosis.

**Objevives:**
- To evaluate the characteristics of patients with CCH in the Basque Country.
- To evaluate the success of total T4 [TT4] in our neonatal screening (NS) for the early diagnosis of MPD.

**Material and methods:**
Retrospective study of 20 CCH controlled by pediatric endocrinologists of the Basque Country in the last 21 years [1997-2009: 426,174 live newborns]. The results of the NS performed at 48 hours of life, including [TT4] and TSH on filter paper, as well as clinical, hormonal and image data have been collected. The lower cut-off point for [TT4] in NS is 6 μg/dL. Two cases without T4 levels were excluded. The patients were classified according to [TT4] in 3 subgroups: <6 μg/dL (n=4), 6-8 μg/dL (n=8) and >8 μg/dL (n=6).

MPD was diagnosed with affection ≥2 hormonal axes.

Adrenal insufficiency (AI) detected in the first year of life was considered determinant of severity.

**The CCH incidence: 1/22,308 live newborns**
- Mean gestational age: 39 weeks (33-41)
- Mean birth weight: 3,175 gr (2,300-4,100)
- 61% males

**Patients with [TT4]<6 μg/dL in NS**

**Patients with [TT4]>6 μg/dL in NS**

**Patients with [TT4]>6 μg/dL in NS**

**CONCLUSIONS:**
1. The determination of T4 in the NS allowed an early diagnosis of 25% of the CCH, as well as the suspicion of MPDs.
2. Most of the MPDs including AI were diagnosed in the first year of life. In all of them, the [TT4] in the NS was <8 μg/dL. Just considering a clinical point of view, we think it could be interesting to increase the lower cut-off of T4 in our NS.

**11/18 patients had AI and their average [TT4] in NS was lower**

AI: 6±2.8 μg/dL vs non-AI: 8.9±3.5 μg/dL
(U-Mann Whitney p=0.03)

- 4 patients had [TT4]<6 μg/dL in NS
  - Three of them were diagnosed of AI in the first month of life but the fourth maintains adrenal function at 5 years
- 8 newborns had [TT4] 6-8 μg/dL
  - 7/8 of patients were diagnosed of AI before 12 months of age, associating clinical symptoms, alterations of the pituitary and/or other hormonal deficits
- 6 patients had [TT4] ≥ 8 μg/dL
  - Only 1/6 of these patients have AI currently