Children and adolescents with severe TBI can develop late pituitary dysfunction independently of the results of the first pituitary evaluation

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Background:

- Traumatic brain injury (TBI) is common in childhood
- Little is known about mid term and long term endocrine outcome
- We have previously demonstrated that pituitary dysfunction is not rare one year after severeTBI [1]

Aim of the study:

- To determine in a prospective way if patients with a personal history of severe TBI (GCS < or = 8) during childhood may develop long term pituitary dysfunction independently of the results of early hormonal investigations

Method and patients:

- Prospective follow up of an initial cohort of subjects (N=87) with a personal history of severe TBI
- 38/87 patients currently included
- 30 boys/ 8 girls
- 35 accidental TBI, 3 inflicted TBI
- Mean age at TBI: 6,7y [0,8-15,2]
- 73 were accidental TBI, 14 inflicted TBI (shaken baby syndrome)
- Clinical and hormonal evaluation (basal and dynamic) one year after TBI
- Clinical and hormonal evaluation (basal) at last visit
- Growth hormone deficiency requiring substitution was defined by decreased growth velocity under -2 SD, low IGF1 under -2 SD, 2 stimulated GH peak under 7ng/ml

Results:

- Mean age: 13,3 yr [5,3-21,8]
- Mean duration after TBI: 6,4 years [4,6-8]
- 29 had normal BMI, 4 overweight, 5 obese
- One year after TBI, 20 patients had normal pituitary function (group 1), 18 patients had growth hormone dysfunction (2 stimulated GH peak under 7ng/ml)

	Group 1 N= 20 13,1 yr [6,9-21,8] 6 yr after TBI [5,4-6,7]	Group 2 N=18 13 yr [5,3-20,2] 5,6 yr after TBI [3,9-7,1]
Central precocious puberty	• N=1 • Girl aged 7,8 yr • 6,3 yr after TBI • B2P1	• N=1 • Boy aged 10 yr • 6,9 yr after TBI • G2P1
Growth hormone deficiency requiring substitution	• N=1 • Boy aged 10 yr, 5,6 yr after TBI	• N=2 • 1 Girl aged 11,9 yr, 4,6 yr after TBI, B3P3 Tanner stage, obese • 1 Boy aged 12,3 yr, 6,4 yr after TBI, G2P1 Tanner stage
Normal evaluation	• N=18	• N=15

Conclusion:

- Patients may develop clinical expression of pituitary dysfunction long term after severe TBI even if first explorations were normal
- Long term and regular follow up is needed in patients with history of severe TBI

1- C. PERSONNIER et al, JCEM 2014 Jun; 99(6):2052-60

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