



# Acquired growth hormone deficiency and hypogonadotropic hypogonadism in a subject with repeated head trauma, or Tintin goes to the neurologist

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We describe the unique case of a public figure who is well known for having delayed pubertal development and statural growth (Fig. 1). We believe we have discovered why Tintin, the young reporter whose stories were published between 1929 and 1975, never grew taller and never needed to shave.

We do not know Tintin's perinatal history. According to Hergé, the author of these stories, Tintin was 14 or 15 years old when he was created.<sup>1</sup> He would, therefore, have been at least 60 years old during his final adventure with the Picaros.<sup>2</sup> In that book, even though he had reached adulthood, Tintin has no beard or grey hair, and he exhibits no signs of pubertal development.

Recent literature has helped us gain a better understanding of the pathophysiology of hypopituitarism resulting from repeated head trauma.<sup>3</sup> We believe that the multiple traumas Tintin sustained could be the first case of traumatic pituitary injury described in the literature.

## Methods

We conducted an exhaustive assessment of this young reporter's stories in order to find incidents of significant neurotrauma. The first author (A.C., 5 years old) looked through all of the books along with the second author (L.O.C., 7 years old), who knows how to read and count higher than 10. A.C. was responsible for identifying pictures in which Tintin "*tombait dans les pommes*" (literally, "fell into the ap-

ples," i.e., "lost consciousness"). This procedure had to be re-evaluated after 2 books because of the obvious lack of "apples" in Tintin's adventures. For each incident, we identified the cause of the trauma, the length of loss of consciousness (calculated by the number of frames before Tintin returns to normal activity) and the apparent severity of the trauma (indicated by the number of objects [e.g., stars, candles] revolving above Tintin's head). A Spearman correlation test was performed between the last 2 items.

## Results

The research team (Fig. 1) successfully identified 50 significant losses of consciousness in 16 of Tintin's 23 books (see Table 1). Of these, 43 incidents involved head trauma with loss of consciousness representing grade 3 concussions. Tintin sustained 26 concussions resulting from a blow with a blunt object. The most frequently used object was a club (8 times). Other causes for the subject's loss of consciousness included bullet injury (3), chloroform poisoning (3), explosions (4), car accidents (3) and falls (2).

The mean length of loss of consciousness was 7.5 frames, and 7.5 objects, on average, revolved above his head during the impact. There was no statistically significant relation between these 2 elements of data ( $p = 0.42$ ).

At no point in the books did the subject shave, grow taller or exhibit signs of pubertal development. Unfortunately, no brain imaging was performed. Also,

the subject experienced loss of consciousness after "mild" dehydration,<sup>4</sup> which could be an indirect sign of secondary adrenal insufficiency. This could be due to panhypopituitarism.

## Conclusion

We hypothesize that Tintin has growth hormone deficiency and hypogonadotropic hypogonadism from repeated trauma. This could explain his delayed statural growth, delayed onset of puberty and lack of libido.

We also believe that involving chil-

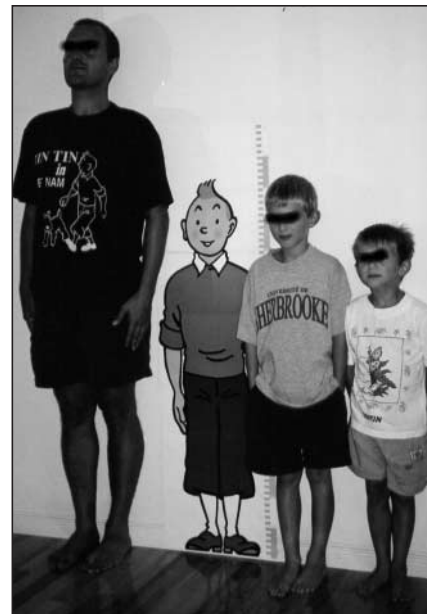


Fig. 1: The patient and the research team (left to right): C.C. (33 years old, Tanner staging V), Tintin (60 years old [?], delayed development), L.O.C. (7 years old) and A.C. (5 years old).

dren in research (the first 2 authors) is possible and beneficial. As a result, A.C. learned to count to 10 with good interobserver reliability and now knows the meaning of the expression “*tomber dans les pommes.*”

**Table 1: Neurological traumas sustained by the subject (by book title)**

Book title; cause of injury (page no.)	Loss of consciousness		Book title; cause of injury (page no.)	Loss of consciousness	
	Length*	Severity†		Length*	Severity†
<i>The Black Island</i>			<i>Land of the Soviets</i>		
Bullet injury (1)	4	0	Train accident (21)	1	7
Blow from a club (7)	3	7	Hit by a tree trunk (86)	2	9
Chloroform poisoning (18)	48	5	Explosion (105)	2	14
Hit by a rake (26)	5	12	Blow from a club (119)	5	6
Hit by a brick (52)	7	9	<i>The Red Sea Sharks</i>		
<i>The Blue Lotus</i>			Explosion (20)	9	0
Chloroform poisoning (15)	22	0	<i>The Secret of the Unicorn</i>		
Hitting a tree trunk (22)	1	1	Chloroform poisoning (35)	0	0
Bullet injury (49)	5	3	Hitting a tree trunk (50)	0	0
<i>The Calculus Affair</i>			Blow from a stick (52)	0	0
Explosion (27)	0	0	<i>The Shooting Star</i>		
Blow from a club (30)	0	0	Struck by a giant apple (56)	10	7
<i>The Crab with the Golden Claws</i>			<i>Tintin and the Broken Ear</i>		
Blow from a club (10)	0	0	Blow from a club (25)	9	4
Hit by a whisky bottle (25)	0	0	Car accident (42)	14	4
Hit by a camel femur (30)	0	0	Struck by an oar (55)	4	8
Dehydration (32)	0	0	<i>Tintin in America</i>		
<i>Destination Moon</i>			Car accident (4)	2	0
Bullet injury (21)	60	0	Blow from a club (5)	3	3
<i>Explorers on the Moon</i>			Blow from a billy club‡ (7)	1	10
G-force (22)	13	0	Gas poisoning (12)	12	1
Blow from a club (39)	29	10	Struck by a sword (48)	1	9
Hypoxemia (57)	4	9	<i>Tintin in the Congo</i>		
Hypoxemia (58)	34	0	Struck by Snowy (13)	3	10
<i>King Ottokar's Sceptre</i>			Fight with a lion (22)	11	10
Car accident (39)	2	5	Blow from a club (32)	6	11
Hit by a camera (45)	2	14	Hit by a board (43)	6	7
<i>Land of Black Gold</i>			<i>Tintin in Tibet</i>		
Hit by a brick (12)	0	11	Falling on the ice (31)	18	0
Falling down stairs (12)	0	7	Avalanche (44)	5	0
Explosion (16)	0	0			
Dehydration (21)	0	0			
Blow from a stick (27)	0	6			
Punch (47)	0	0			

\*Measured by number of cartoon frames before subject returns to normal activity.

†Measured by number of objects revolving above subject's head.

‡Delivered by the police.

The main limitation of our article is the lack of paraclinical confirmation of the diagnosis. But, according to the second author (L.O.C.), “That’s alright.”

To conclude, it is difficult to determine accurately Tintin’s age and level of physical and sexual development. He has the physique of a child, but his conduct suggests that of an adult. Throughout his adventures, he has no girlfriend or marriage plans to curtail his activities. His “neutrality” allows both children and adults around the world to identify with this hero, which probably explains his universal appeal after 75 years of public life.

Antoine Cyr currently attends Chez Marlène daycare, and his brother Louis-Olivier Cyr is a first-grade member at École primaire Champlain. Claude Cyr is Associate Professor with the Faculty of Medicine, University of Sherbrooke, Sherbrooke, Que.

*Contributors:* A.C. and L.O.C. were actively involved in collecting data. C.C. wrote the article. The 3 authors reviewed the final version together. A.C. and L.O.C. did not understand the following words: hypogonadism, panhypopituitarism, Spearman correlation and libido. C.C. explained to them that the words mean “no hair above the wee-wee because of a missing hormone,” “a part of the brain that is not working,” “a test to see if 2 things are connected” and “wanting to make love,” respectively. After a lengthy discussion about hair and “wee-wees” and the meaning of “making love,” the 3 authors gave their approval for publication.

## References

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