



## Ailing allegories and sickly stories: the quest for pathology in children's literature

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The presumption that fictional characters may have real diseases is nothing new. The description of mental illness is a constant feature in literary criticism, and with increasing frequency, descriptions of physical afflictions suffered by literary characters have been showing up in the medical literature. Various characters have even lent their names to medical syndromes — who doesn't know that Pickwickian Syndrome derives its name from a character in Charles Dickens' *Pickwick Papers* or that the Lilliputian Syndrome derives its name from the land of little people in Jonathan Swift's *Gulliver's Travels*?<sup>1</sup> However, characters in children's literature have been less well examined for physical maladies. Save for a recent article on head trauma in nursery rhymes,<sup>2</sup> this area seems largely unexplored. We propose that children's literature provides a wealth of descriptions of disease states; one only has to look. Consider the following as examples.

### Winnie the Pooh

The tale of Winnie the Pooh, A A Milne's good-natured but bumbling bear, seems on the surface to be a simple children's story. However, examining Mr. Milne's hero in a medical light casts a different shadow — that of a short, heavy-set, polyphagic bear. It is not difficult to appreciate the relative corpulence of Winnie the Pooh. In fact, it is well described. In Chapter 2 of *Winnie the Pooh*, Pooh becomes lodged firmly in the doorway of his friend Rabbit's house as a direct result of his generous girth.<sup>3</sup> Does he, however, have true truncal obesity? To test this theory, we measured the classic Pooh doll belonging to one of our daughters. The waistline measurement was found to be 37 cm; the hip circumference was 38.5 cm. This gives a waist to hip ratio of 0.96, well over the 0.9 necessary to define abdominal obesity. This got us thinking... Could Pooh be an early example of the metabolic syndrome? By World Health Organization criteria, he would also



need to have hyperinsulinaemia and hypertension or dyslipidaemia.<sup>4</sup> While it is difficult (if not impossible) to measure the fasting plasma glucose level and blood pressure of a fictional character, we do believe that Milne left clues for us to follow. The first is that Pooh is always hungry — the polyphagia of impaired glucose tolerance. The second is the very nature of his food — as everyone knows, honey-coated translated to Latin is *mellitus*. We think that Winnie the Pooh may be a very appropriate spokesperson for metformin.

### Humpty Dumpty

*Humpty Dumpty sat on a wall,  
Humpty Dumpty had a great fall,  
All the king's horses and all the king's men  
Couldn't put Humpty together again.*

So, what caused the massive trauma that apparently befell Humpty Dumpty? The classic image of this character is that of a large egg, which has fallen from a wall. However, the origin of this image is exceedingly unclear. Might it, in fact, be that Humpty Dumpty was actually not an egg, but rather a human with eggshell-like bones? We propose that Mr Dumpty actually suffered from osteopetrosis, a rare disorder characterised by impaired resorption of bone by osteoclasts.<sup>5</sup> The resulting bone is exceedingly dense and can, in severe cases,

crowd out haematopoietic cells. This results in exceedingly brittle bones, and affected individuals have frequent fractures, not infrequently from "great falls". Also, with the displacement of the marrow, extramedullary haematopoiesis is common and frequently causes hepatosplenomegaly.<sup>5</sup> Is it possible that Mr Dumpty acquired a distended abdomen as a result of organomegaly, producing a torso that was egg-shaped? Furthermore, the resultant anaemia may lead to pallor, causing the skin to assume a colour reminiscent of an eggshell. The possibility that Mr Dumpty represents the first described case of osteopetrosis is high, and should be investigated further.

### Goldilocks and the three bears

In this classic tale, Goldilocks happens upon the three bears' house. She samples all of their food, angrily rejecting their porridge as either too hot or too cold. Then, after finding the perfect bed, she falls into a deep sleep. These are all horribly inappropriate things to do in a stranger's house. In this story, we appear to have hypersomnia, polyphagia, social disinhibition, and

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irritability — all strongly characteristic of the Kleine–Levin syndrome.<sup>6</sup> This syndrome typically (though not always) occurs in adolescent males, and involves periods of hypersomnia followed by megaphagia. While Goldilocks does not exhibit the hypersexuality frequently associated with this disorder, she does display its characteristic irritability, confusion, and impulsive behaviour. As for the apparent reversal of the sleep–eat phase in this story, it is highly likely that Goldilocks had awoken from sleep immediately before the initiation of the tale.

### Little Boy Blue

*Little Boy Blue, come blow your horn  
The sheep's in the meadow, the cow's in the corn,  
Where's the little boy who looks after the sheep?  
Under the haystack, fast asleep.*

To conventional thinkers and many a child, this rhyme conjures up an image of a lazy little boy, dressed all in blue catching an ill-timed nap while his chores go unfinished. We suggest an alternative hypothesis.

As individuals can change their clothing quite easily, it would be folly to record for posterity a rhyme based upon colour of the the garments of a small child. On the other hand, what if the “blue” represents some intrinsic property of the individual? We propose that Little Boy Blue was actually cyanotic, causing a bluish hue in his skin. Examining the rest of the data available in the rhyme, it would seem likely that Little Boy Blue was born with the rare Taussig–Bing syndrome (a ventricular septal defect located immediately below the pulmonary valve).<sup>7</sup> This causes transposition of the great vessels and subsequent pulmonary hypertension. Severe pulmonary hypertension doubtlessly led to shortness of breath and fatigue, necessitating frequent sleep. The act of blowing a horn would undoubtedly decrease venous return by increasing intrathoracic pressure and causing a relative decrement in the forward flow of blood. It is not difficult to imagine that this would be unsettling to anyone with already compromised respiratory function, let alone a small child. Little Boy Blue was not lazy; he merely needed a cardiothoracic surgeon.

### Modern examples

Raggedy Ann is a well known red-haired character (as is her male counterpart, Raggedy Andy, who must be mentioned for the sake of political correctness). To even the most casual observer, Ms Ann does not appear to be the picture of health. Immediately noticeable is the straight, coarse, red hair surrounding a plump, round face. Further investigation and more careful physical examination reveal in Ms Ann more subtle signs of disease. Vital signs show Ms Ann to be hypothermic (in fact dangerously close to poikilothermic) and underweight. Further dermatological inspection shows her to have extremely dry skin. Neurological evaluation shows some degree of muscle flaccidity and perhaps even atrophy. Given these findings, it seems entirely likely that Ms Ann suffers from protein malnutrition, or more specifically, Kwashiorkor.<sup>8</sup> Ms Ann is apathetic about this probable diagnosis (and everything else for that matter), which is also a symptom of the disease.

The trend continues. Modern day characters exhibit modern day afflictions. A certain olive-colored, swine-loving amphibian host of a children's television show appears to be suffering from a variety of maladies. His most striking feature is his greenish hue; but we should not overlook his obvious exophthalmos, absence of a

visible nose, hyperkineticism, and loss of coordination. A MEDLINE search gives a possible unifying answer for this constellation of symptoms: exposure to nitromethane. As this chemical is a common synthesis intermediate in agricultural fumigants and biocides, it is likely that this unfortunate's pond was exposed. National Toxicology Program studies of toxicology and carcinogenesis related to nitromethane in F344/N rats and B6C3F1 mice show that this chemical can cause hyperactivity and loss of coordination; hepatomegaly; anaemia; increased methaemoglobin concentration; and exophthalmos along with olfactory degeneration.<sup>9</sup> This character's protuberant eyes and lack of nasal structures are self-evident. We postulate that his greenish hue is in fact a combination of anaemia and increased bilirubin level from methaemoglobinaemia, worsened by hepatic dysfunction. His anaemia may be severe enough to cause a peripheral cyanosis, with his jaundice and cyanosis combining to cause a greenish colouration.

### Conclusion

We believe we have made nothing short of tenuous arguments that nursery rhymes and other popular children's literature are often thinly veiled references to chronic disease states. We advise physicians to become observant of the literary works that their children and grandchildren enjoy, and, if possible, to subject them to the rigour of evidenced-based medical analysis. This might be an activity that brings the whole family together.

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