Medical conditions in works of art

With their stark contrast and blurred boundaries, the relationship between science, medicine and art has long been a fascinating area of exploration. The depiction of medical conditions in art has enhanced our understanding of the evolution of disease and its treatment, but exact diagnosis of the underlying medical conditions can be difficult. This article reviews some paintings suggesting underlying medical diagnoses under specialty-based headings.

Various art forms have been used to facilitate medical education, perhaps most notably in the study of anatomy. Anatomical enquiry has contributed much to the accurate representation of the human form by artists such as Leonardo da Vinci (1452–1519). Conversely, modern medical artists combine a wealth of medical knowledge and artistic talent to represent pathological conditions in a visual context. Emery and Emery (2006) used examples of artwork to catalogue the development of diagnostic techniques and medical treatments and explore the changing nature of the profession and its role in society. An artist's medical condition and its effect upon his/her life and work can also elucidate previously unknown elements of that disease process. This article demonstrates that the aesthetic appreciation of art can be enhanced by the analysis of a constellation of signs suggestive of an underlying or unifying diagnosis. Although not in any way exhaustive, examples under specialty-based headings will be used to illustrate this point.

Cardiovascular

In his article on genetic disorders in portraits, Emery (1996) described the progressive evolution of signs in the many self-portraits of the Dutch painter Dick Ket (1902–40). Ket was born with a serious heart defect and Emery suggests that the illustrated development of clubbing, cyanosis and plethora could be explained by a unifying diagnosis of tetralogy of Fallot with dextrocardia (*Figure 1*).

Endocrinology

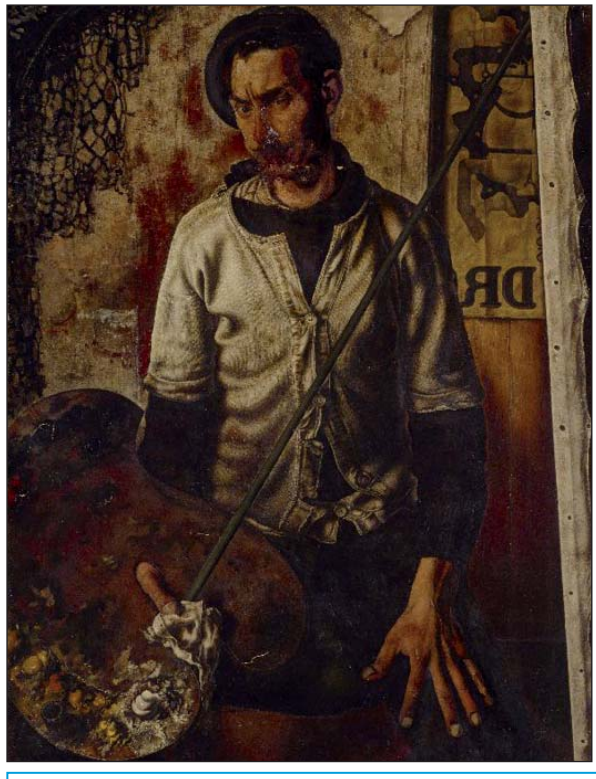
Two examples of signs seen in thyroid disease are taken from frescoes by Michelangelo di Lodovico Buonarroti Simoni (1475–1564) found in the Sistine Chapel in Rome. An example of goitre is seen in The Separation of Light from Darkness painted on the Chapel's ceiling. Michelangelo, himself thought to have been afflicted with goitre while painting the ceiling, may have modeled the Supreme Creator upon himself (Bondeson and Bondeson, 2003). *Figure 2* shows a detail of the ceiling clearly demonstrating what appears to be a symmetrical, multinodular swelling in the neck.

The second of Michelangelo's frescoes is Last Judgment (1537–41), which appears on the Chapel's altar wall (*Figure 3a*). Pozzilli (2003) speculated that several features suggestive of thyroid-associated ophthalmopathy are present in one of the faces on the left (*Figure 3b*). The woman in the turban appears to have exophthalmos, chemosis of the conjunctiva and lid oedema. Whether Michelangelo himself ever recognized any association between goitre and these particular eye signs in any of his subjects can only be hypothesized. Although recognized many centuries previously, it was not until 1835 that Graves formally described thyroid-associated ophthalmopathy.

Dermatology

Common dermatological conditions such as warts and naevi are regularly observed in paintings, most obviously in portraits. Strauss et al (2004) explored the frequency with which these common cutaneous imperfections could be identified among the portraits in the National

Figure 1. Self portrait with beret (1933), painting by Dick Ket (Gemeentemuseum, Arnhem, Netherlands).



Dr Victoria Salter *is FY2 Doctor, North Central Thames Foundation School and* **Mr Manoj Ramachandran** *is Consultant Paediatric and Young Adult Orthopaedic Surgeon, Barts and The London NHS Trust, London E1 1BB*

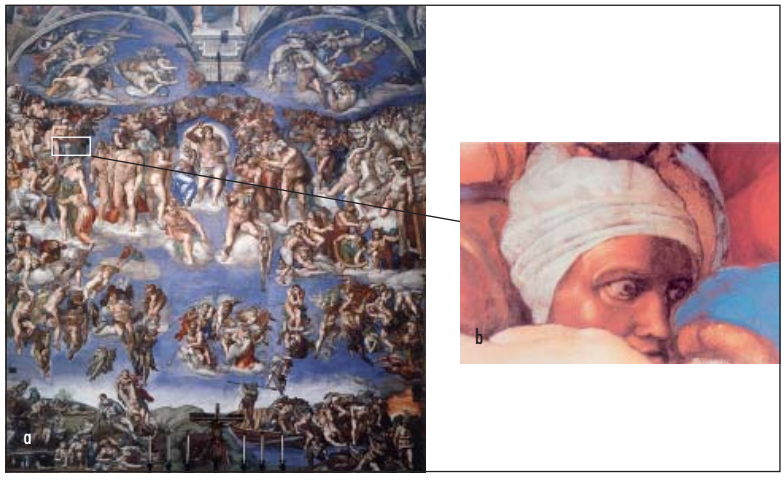
Correspondence to: Mr M Ramachandran

Figure 2. Detail from The Creator separating light from darkness (1512), painting by Michelangelo Buonarroti (Cappella Sistina, Vatican).

Portrait Gallery in London. Famous faces such as those of Sir Francis Drake and Charles Darwin are among those noted to have rosacea and warts/dermal naevi respectively.

Rembrandt Harmenszoon van Rijn (1606–69) produced at least 50 self-portraits in his career, perhaps to experiment with his artistic techniques or as a psychological catalogue of his moods and situation at various stages of his life. From a medical perspective, they provide an interesting insight into a personal perception of health and ageing. A detailed study of Rembrandt's Self-portrait 1659 (*Figure 4*) by Espinel (1997) suggests meticulous attention to detail in the accurate reproduction of his skin. From a dermatological perspective, the author potentially diagnoses dermachalasis, xanthelasma, telangiectasia, rosacea and associated rhinophyma. Hankey (1998) has suggested that this constellation of symptoms, together with periorbital puffiness, sparse hair and eyebrows, pallor and obesity, could signify an underlying diagnosis of hypothyroidism with secondary hypercholesterolaemia.

Figure 3. a. Last Judgment (1537–41), painting by Michelangelo Buonarroti (Cappella Sistina, Vatican). b. Detail.



Musculoskeletal

Appelboom (2004) eloquently explored the importance of art as a means of representing rheumatological disease. As an example, let us study in detail The Three Graces by Peter Paul Rubens (1577–1640) (*Figure 5*). In this painting there are several anatomical quirks which have raised interest and debate among keen observers, leading to varied interpretations. Appelboom (2005) identifies a Boutonnière's deformity in the right hand of the grace on the left in the painting. The association of this deformity with the diagnosis of rheumatoid arthritis leads the authors to speculate about Rubens' own well-documented diagnosis of gouty rheumatism. In an age where most rheumatism was called gout, did he in fact suffer from rheumatoid arthritis and choose to represent his own hands in his artwork? This might explain why a young girl could have signs in her hands which take years to develop.

Figure 4. Self-portrait 1659, painting by Rembrandt van Rijn (Andrew W Mellon Collection, National Gallery of Art, Washington DC).

Figure 5. The Three Graces (1638), painting by Peter Paul Rubens (Prado Museum, Madrid, Spain).

However, Dequeker (2001), studying these three women who were known to be sisters, suggests a unifying diagnosis of benign hypermobility syndrome. This would explain the hand signs along with their flat feet, hyperlordosis, scoliosis and positive Trendelenburg's sign of the middle grace. Hansen (2002) in turn explains that the classical contrapposto posture in Greek and Roman painting, described above as a positive Trendelenburg's sign, was used to enhance the animation of the subjects and is quite easily adopted by people with normal connective tissue.

Neurology

Close examination of the eyes and face can often yield important clues in the diagnosis of neurological disorders. Examples of sculpture depicting a unilateral facial weakness can be found to date as far back as the 7th to 6th century BC in a votive-statuette discovered in Southern Crete (Pirsig et al, 1995). Canalis and Cino (2003) describe the phenomenon in ceramics from the time of the Moche of northern Peru. These date to before 700 AD and were perhaps designed solely to record their pathological observations. In more recent times, facial asymmetry has been observed in several portraits including that of Don Andres del Péral painted by Francisco de Goya (1746–1828) (*Figure 6*).

Smith (1999) explored the muscle wasting and facial weakness characteristic of myotonic dystrophy thought to be evident in the long face, bilateral ptosis and premature frontal balding of Melchior as he presents his gift of frankincense in The Adoration of the Magi (*Figure 7*) by Pieter Bruegel the Elder (1525–69). Alternatively, the subtle asymmetry observed in the king's face may be the result of a seventh nerve palsy (Karcioglu, 2002).

Figure 6. Don Andres del Péral (1797), painting by Francisco de Goya (National Gallery, London, England).

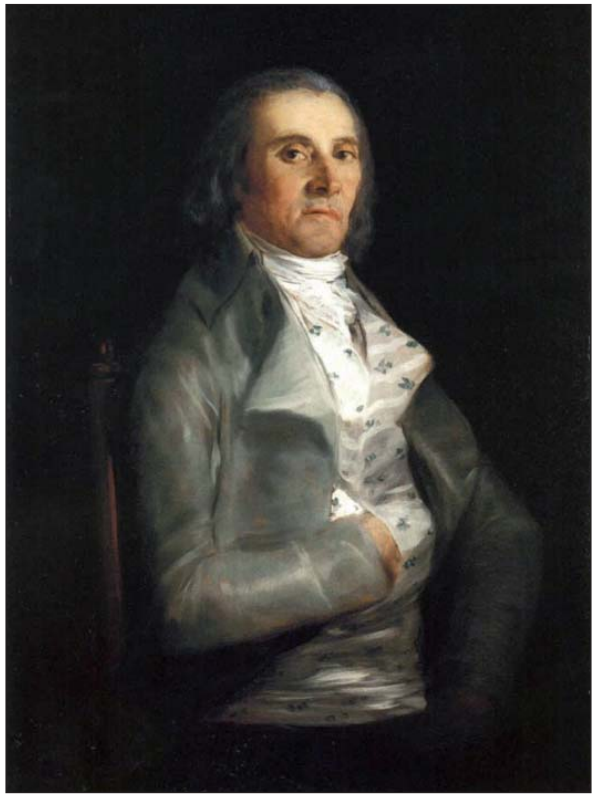


Figure 7. Adoration of the Magi (1564), painting by Pieter Bruegel the Elder (National Gallery, London, England).

Ophthalmology

Pieter Bruegel the Elder's exquisite attention to detail in the depiction of his subjects' faces, clothes and surroundings has often sparked debate among viewers as to the exact nature of any underlying meaning, providing much material for diagnostic debate. This is exemplified in his painting of The Parable of the Blind leading the Blind (*Figure 8*). At first glance, this painting appears to simply illustrate the meaning of Matthew 15:14 'if the blind lead the blind, both shall fall into the ditch', as a procession of six blind men are led one by one towards the ditch.

On closer inspection, these are peasant men, yet their clothes are rich. So what class of people is represented as 'blind'? The church is in an interesting position: do the men move away from it, thus rendering them 'blind'? Or does it stand separated from their needs, perhaps reflecting the artist's disillusionment with the church or even organized religion (Karcioglu, 2002)? Little is known about Bruegel's own political or religious views thus encouraging speculation.

Closer inspection of their faces provides physical evidence of their blindness. Karcioglu (2002) reviews many of the diagnoses attributed to each of the men, each thought to be afflicted by different conditions. The face of the first man is not seen. The second man appears to be missing eyelids and globes on both sides. The author discusses the likelihood of bilateral enucleation, exenteration, post-cauterization of infection or possible branding.

Figure 8. The Parable of the Blind Leading the Blind (1568), painting by Pieter Bruegel the Elder (Museo Capodimonte, Naples, Italy).

KEY POINTS

- The presence of medical conditions is suggested in many forms of artwork.
- Deliberate illustration of medical concepts aids understanding of underlying meaning.
- Examples of medical signs from a wide variety of specialties can be identified in paintings, drawings and sculpture.
- Their study can improve understanding of the evolution of disease and its treatment while enhancing the aesthetic appreciation of the artwork itself.

Extensive opacity of the cornea (corneal leukoma) is generally considered to explain the blindness of the third man. The fourth man appears to demonstrate features consistent with an end-stage response to severe ocular inflammation. His concurrent facial scarring is thought to suggest an external insult such as burns. The fifth man's eyes are unseen beneath a visor. The possibility of photophobia or severe blindness resulting in the complete loss of light perception is considered by the author who goes on to dispute previous suggestions of pemphigus in the sixth man. It is argued that his facial features are more characteristic of bullous pemphigoid, particularly in the northern hemisphere.

Conclusions

Accurate artistic observations have resulted in a visual record of medical conditions, sometimes even before their discovery and description. The presence of medical signs in paintings continues to fascinate modern viewers, either by simply enhancing an appreciation of art itself or by serving as a diagnostic challenge in the face of a constellation of visual signs. This discussion observes clinical signs from a wide variety of medical specialities in paintings, drawings and sculpture. The examples described here illustrate how their presence can prompt discussion and debate. In doing so the authors hope to have demonstrated how the study of both medicine and art can add much to the appreciation of both disciplines. **BJHM**

Conflict of interest: none.

Appelboom T (2004) Art and history: a large research avenue for rheumatologists. *Rheumatology* **43:** 803–5

Appelboom T (2005) Hypothesis: Rubens – one of the first victims of an epidemic of rheumatoid arthritis that started in the 16th-17th century? *Rheumatology* **44:** 681–3

Bondeson L, Bondeson A-G (2003) Michelangelo's divine goitre. *J R Soc Med* **96:** 609–11

Canalis RF, Cino L (2003) Ceramic representations of facial paralysis in ancient Peru. *Otol Neurotol* **24**(5): 828–31

Dequeker J (2001) Benign familial hypermobility syndrome and Trendelenburg sign in a painting "The Three Graces" by Peter Paul Rubens (1577-1640). *Ann Rheum Dis* **60**(9): 894–5

Emery AE (1996) Genetic disorders in portraits. *Am J Med Genet* **66**(3): 334–9

Emery AE, Emery ML, eds (2006) *Medicine and Art.* RSM Press Ltd, London

Espinel CH (1997) A medical evaluation of Rembrandt. His self-portrait: ageing, disease, and the language of the skin. *Lancet* **350**(9094): 1835–7

Hankey GJ (1998) Rembrandt's self-portrait. *Lancet* **351**(9106): 915

Hansen SE (2002) Scoliosis and Trendelenburg sign in a painting by P P Rubens. *Ann Rheum Dis* **61**(2): 182

Karcioglu ZA (2002) Ocular pathology in The Parable of the Blind Leading the Blind and other paintings by Pieter Bruegel. *Surv Ophthalmol* **47**(1): 55–62

Pirsig W, Helidonis E, Velegrakis G (1995) Medicine and art: facial palsy depicted in archaic Greek art on Crete. *Am J Otolaryngol* **16**(2): 141–2

Pozzilli P (2003) Blessed with exophthalmos in Michelangelo's Last judgement. *Q J Med* **96**(9): 688–90

Smith PE (1999) Neurology in the National Gallery. *J R Soc Med* **92**(12): 649–52

Strauss RM, Marzo-Ortega H, Goulden V (2004) Skin abnormalities in the National Portrait Gallery. *J Eur Acad Dermatol Venereol* **18**(5): 566–8