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ORIGINAL ARTICLE

Iconographic Evidence of Endocrine Disorders in Classical and Contemporary Artistic Expressions

Evidências Iconográficas de Distúrbios Endócrinos em Expressões Artísticas Clássicas e Contemporâneas

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ABSTRACT

Introduction: Throughout history, art has served as a mirror of human physiology and pathology. Endocrine disorders often manifest with distinctive phenotypic features that have been captured in visual arts across various periods. Paintings and sculptures from classical to contemporary eras provide a unique, underexplored archive of iconographic evidence reflecting clinical signs of endocrine pathologies. **Objective**: To systematically analyze a selection of classical and contemporary artworks for iconographic evidence suggestive of endocrine disorders, correlating visual cues with clinical features of hormonal pathologies. **Methods**: A multidisciplinary approach was employed, involving detailed iconographic analysis of 100 artworks spanning Renaissance to modern periods. Clinical features suggestive of endocrine disorders—using standardized clinical criteria to identify signs consistent with acromegaly, Cushing's syndrome, hypothyroidism, hyperthyroidism, and gynecomastia—were identified and cross-referenced with current medical diagnostic standards. Historical context and artist intent were also examined to assess the accuracy and implications of these depictions. **Results**: Ten percent (n=10) of the selected artworks exhibited morphological features potentially indicative of endocrine disorders. The most frequently identified signs included facial rounding, buffalo hump, goiter, and soft-tissue thickening. Notably, some artists employed these features symbolically, whereas others documented clinical reality, predating formal medical descriptions of these conditions. These findings underscore the dual role of art as both a cultural artifact and a visual clinical record. **Conclusion**: Iconographic analysis may serve as a complementary tool in understanding the historical emergence of endocrine diseases. These findings suggest the hypothesis that endocrine disorders have been present in human populations longer than previously documented in medical literature.
Keywords: Endocrine disorders, art history, medical humanities, iconography.

RESUMO

Introdução: Ao longo da história, a arte tem se constituído como um espelho da fisiologia e patologia humana. As doenças endócrinas frequentemente se manifestam por características fenotípicas distintivas, capturadas nas artes visuais ao longo de diversos períodos históricos. Pinturas e esculturas, que vão da antiguidade clássica à era contemporânea, configuram um acervo singular e pouco explorado de evidências iconográficas, refletindo sinais clínicos de patologias endócrinas. **Objetivo:** Analisar sistematicamente uma seleção de obras clássicas e contemporâneas em busca de

indícios iconográficos sugestivos de distúrbios endócrinos, correlacionando manifestações visuais com características clínicas de patologias hormonais. **Métodos:** Empregou-se uma abordagem multidisciplinar que contemplou análise iconográfica detalhada de 100 obras de arte, abrangendo desde o Renascimento até períodos modernos. Foram identificadas características clínicas sugestivas de doenças endócrinas — utilizando critérios clínicos padronizados para reconhecimento de sinais compatíveis com acromegalia, síndrome de Cushing, hipotireoidismo, hipertireoidismo e ginecomastia — as quais foram confrontadas com padrões diagnósticos médicos vigentes. Contexto histórico e intenção do artista também foram avaliados para aferir a pertinência e as implicações dessas representações. **Resultados:** Dez por cento (n=10) das obras selecionadas apresentaram características morfológicas potencialmente indicativas de distúrbios endócrinos. Os sinais mais frequentemente detectados incluíram arredondamento facial, giba dorsal (giba de búfalo), bócio e espessamento de tecidos moles. Ressalta-se que alguns artistas utilizaram tais atributos de forma simbólica, enquanto outros registraram a realidade clínica, antecedendo descrições médicas formais dessas condições. Esses achados evidenciam o duplo papel da arte como artefato cultural e como registro clínico visual. **Conclusão:** A análise iconográfica pode constituir uma ferramenta complementar relevante na compreensão da emergência histórica das doenças endócrinas. Os dados sugerem a hipótese de que os distúrbios endócrinos já estiveram presentes nas populações humanas por período superior ao documentado tradicionalmente na literatura médica.

Descritores: Distúrbios endócrinos; História da arte; Humanidades médicas; Iconografia.

INTRODUCTION

Endocrine disorders encompass a diverse range of metabolic and hormonal derangements that significantly affect human morphology and health. Conditions such as acromegaly, Cushing's syndrome, hypothyroidism, hyperthyroidism, and gynecomastia produce distinctive somatic phenotypes, which can manifest as observable anatomical alterations.[1] The study of these changes through art history—spanning from Greco-Roman antiquity to the present—offers unique insight into the representation and perception of disease across cultures and eras.[2] Portraiture and figurative art, in particular, not only reflect aesthetic ideals but also inadvertently document physical realities, including overt and subtle signs of disease.[3] The integration

of endocrinological analysis with art scholarship provides a valuable interdisciplinary methodology, revealing how artworks may serve both as cultural artifacts and as visual repositories of clinical phenomena.

Integrating art historical analysis with endocrinology offers a unique interdisciplinary approach to identify and interpret the phenotypic features of endocrine disorders preserved in artworks.[4] This synergy enables the recognition of clinical signs in historical and cultural contexts, providing insights into disease epidemiology, societal perceptions, and medical knowledge across time. Moreover, it enriches the medical humanities by bridging visual culture and clinical science, fostering a deeper understanding of disease phenotypes beyond conventional clinical settings.[5]

Despite growing interest in the medical humanities, there is a notable gap in the literature regarding the iconographic documentation of endocrine disorders across different artistic periods. Most existing studies have focused on isolated cases or anecdotal observations without employing standardized clinical criteria for diagnosis, limiting the scope and impact of such analyses.[6] This gap hinders the full appreciation of art as a valuable resource for medical history and clinical insight.

This study aims to address this gap by conducting a systematic review of classical and contemporary artworks for iconographic evidence suggestive of endocrine disorders. Through a multidisciplinary approach combining endocrinology, and art history, we seek to identify and interpret morphological traits consistent with known hormonal pathologies.

MATERIALS AND METHODS

Study Design

This study employed a retrospective, cross-sectional iconographic analysis to identify and characterize visual representations of endocrine disorders in classical and contemporary artistic expressions. A multidisciplinary approach integrating art history, medical diagnostics, and iconographic analysis was utilized to examine artworks spanning from Greco-Roman antiquity (circa 5th century BCE) to contemporary digital media (up to 2025 CE).

Selection of Artworks

A total of 100 artworks depicting individual human figures were systematically reviewed. The sample size was determined a priori to ensure adequate representation across periods and genres while maintaining feasibility for detailed qualitative analysis.

A purposive sampling strategy was applied to select artworks from major art historical periods, including Greco-Roman, Medieval, Renaissance, Baroque, Modern, and Contemporary eras. The study cohort was selected from an extensive database of digitized artworks sourced from internationally recognized museums, academic archives, and public domain repositories, ensuring broad chronological and geographic coverage. Inclusion criteria encompassed: figurative representations of the human form, high-resolution images allowing detailed anatomical analysis, and documented historical or cultural context. Exclusion criteria included abstract, allegorical, or caricatured representations that could confound clinical interpretation, and those with insufficient resolution or documentation.

Data Collection

Each artwork was subjected to a standardized iconographic assessment protocol. High-resolution images were analyzed using digital imaging software (ImageJ v1.53) to enhance visibility of anatomical details. The protocol included:

- Visual Inspection: Three reviewers (LJOA, GCMO, LMO) with expertise in medical clinic and endocrinology, examined each artwork for morphological features suggestive of endocrine disorders. These features included, but were not limited to, neck enlargement (goiter), craniofacial asymmetry (acromegaly), moon facies or abdominal obesity (Cushing's syndrome), and myxedematous features (hypothyroidism), and other features of endocrine diseases.
- Contextual Analysis: Historical records, artist biographies, and cultural documentation were reviewed to contextualize potential medical conditions depicted, including prevalent diseases in the artwork's temporal and geographic setting.
- Annotation: Anatomical anomalies were annotated using a standardized template, noting the location, size, and visual characteristics of suspected pathological features.

Diagnostic Criteria

Endocrine disorders were identified based on established clinical diagnostic criteria adapted for visual analysis. Reference standards included the World Health Organization's International Classification of Diseases and clinical guidelines from the Endocrine Society. Visual cues were cross-referenced with medical literature to ensure

diagnostic accuracy. For example, goiter was identified by visible thyroid enlargement in the neck region, while acromegaly was inferred from disproportionate craniofacial features, such as enlarged jaw or brow.

Data Analysis

Qualitative data from iconographic assessments were synthesized using thematic analysis to identify recurring patterns of endocrine disorder representation across artistic periods.

Ethical Considerations

As the study involved analysis of publicly available artworks and historical data, no ethical approval was required.

Study limitations

The study acknowledges limitations inherent to iconographic analysis, including potential artist stylization, lack of clinical confirmation for depicted conditions, and variability in image quality.

RESULTS

Overview of Analyzed Artworks

A total of 100 artworks were systematically examined, of which 10 (10%) were identified based on the presence of visual characteristics indicative of potential endocrine disorders. These selected pieces were distinguished by the manifestation of specific phenotypic traits associated with hormonal imbalances, including alterations in adipose tissue distribution, facial edema, changes in skin texture, and other visual markers suggestive of endocrine system dysfunctions. The selection of these artworks facilitated a comprehensive analysis of clinically relevant signs as artistically depicted, thereby enhancing the understanding of the visual representation of endocrine pathologies.

These artworks spanned multiple historical periods: Greco-Roman, Medieval, Renaissance, Baroque, Modern, and Contemporary. The selected artworks originated from diverse geographic regions, including Europe, Asia, and the Americas. High-resolution images enabled detailed anatomical analysis.

Table 1. Selected Artworks Exhibiting Visual Characteristics Indicative of Endocrine Phenotypes

Artwork (Artist)	Period	Suggested Endocrine Disorder	Key Visual Features
Las Meninas (Velázquez)	Baroque	Hypopituitarism	Short stature, midface hypoplasia
David Bearing the Head of Goliath (van Oost)	Baroque	Acromegaly	Frontal bossing, mandibular prominence
Portrait of an Elderly Man (Holbein)	Renaissance	Acromegaly	Prognathism, enlarged hands
The Birth of Venus (Botticelli)	Renaissance	Hyperprolactinemia (hypothetical)	Morphological alterations suggestive of pituitary adenoma
The Nude Monster (Carreño de Miranda)	Baroque	Cushing's disease	Moon facies, buffalo hump, truncal obesity
Adam and Eve (Holbein)	Renaissance	Goiter	Diffuse thyroid enlargement
Self-Portrait (Samantha Brown)	Contemporary	Graves' disease	Exophthalmos
Half-Length Female Nude (Picasso)	Modern	Gonadal dysgenesis (Turner syndrome)	Short stature, webbed neck
The Bearded Woman Breastfeeding (Ribera)	Baroque	Hyperandrogenism	Hirsutism, lactation
The Dwarf Sebastian de Morra (Velázquez)	Baroque	Hypogonadism	Reduced secondary sexual features

DISCUSSION

Distribution of Endocrine Disorders

A systematic iconographic analysis of 100 artworks identified 10 depictions exhibiting morphological features consistent with endocrine pathologies across six major anatomical systems. These findings were based on visual markers adapted from standardized clinical diagnostic criteria and interpreted within historical and artistic contexts. The 10 artworks with identified endocrine disorders were categorized by the affected endocrine system or condition, as follows:

Pituitary Disorders

Our systematic analysis identified artworks spanning the 14th to 18th centuries demonstrating characteristic consistent with pituitary dysfunction.

1. ***Hypopituitarism***. Characterized by deficient secretion of one or more pituitary hormones, has been subtly reflected in the physical portrayals found in certain classical European paintings, where altered body proportions and diminished secondary sexual characteristics may hint at underlying endocrine dysfunction.[7] Renaissance and Baroque artists, such as those documented in the anatomical-artistic dialogue of the 15th to 17th centuries, often depicted human figures with features consistent with hormonal deficiencies, possibly influenced by their close collaboration with medical practitioners and anatomical studies.[8] These visual representations provide a unique historical record, suggesting that artists captured not only aesthetic ideals but also the physiological realities of their models, including signs compatible with hypopituitarism. Moreover, the presence of such features in art invites a multidisciplinary interpretation that enriches both medical history and art scholarship.

Diego Velázquez's Las Meninas (1656)

Artist and Work Description: Las Meninas, painted in 1656 by the Spanish Baroque master Diego Rodríguez de Silva y Velázquez, is widely regarded as one of the most complex and enigmatic works in Western art history. The painting depicts a scene within the Royal Court of King Philip IV of Spain, centered around the Infanta Margarita Teresa surrounded by her attendants (meninas), chaperones, and courtiers. Velázquez himself appears in the composition, standing at his easel on the left side of the canvas **Fig 1**. The work is celebrated for its sophisticated use of perspective, spatial ambiguity, and psychological depth.[9]

Figure 1. Las Meninas, c.1656.

Source: https://simplykalaa.com/las-meninas/

Historical Context: Commissioned during the height of Velázquez's tenure as the leading court painter in Madrid, Las Meninas reflects the cultural and political prestige of the Habsburg dynasty in 17th-century Spain.[10] The painting was created at a time when portraiture served both aesthetic and propagandistic functions, reinforcing royal authority and dynastic continuity. The presence of individuals with apparent physical anomalies within the royal entourage underscores the integration of such figures into court life, often as jesters or companions.

Observed Clinical Manifestations: A notable figure within the composition is Mari Bárbola, a court attendant positioned at the far right of the painting, whose somatic features are highly suggestive of hypopituitarism or a congenital growth hormone deficiency syndrome. She exhibits marked short stature, disproportional body segments, facial dysmorphism including midface hypoplasia, and possible skeletal abnormalities consistent with pituitary dwarfism. These characteristics align with historical accounts describing her as a "dwarf" in royal records, although modern iconographic analysis suggests a more nuanced interpretation involving endocrine dysfunction rather than merely a skeletal dysplasia.[11]

This analysis of Las Meninas highlights how high-fidelity court portraiture can serve as an unintentional yet scientifically informative record of endocrine phenotypes, contributing to our understanding of the historical representation and perception of metabolic and developmental disorders.

2. ***Gigantism and acromegaly***. Were identified in sculptures and paintings, such as Van Oost's David Bearing the Head of Goliath and the 16th-century portrait "Portrait of an Elderly Man" attributed to Swiss artist Hans Holbein the Younger, shows a subject with marked facial coarsening, increased mandibular protrusion, and enlarged hands—features highly consistent with acromegaly.

Van Oost's David Bearing the Head of Goliath

Artist and Work Description: This 17th-century Baroque painting, attributed to the Flemish artist Pieter van Oost the Elder, is a religious-historical composition depicting the biblical hero David holding the severed head of the Philistine warrior Goliath.[12] The work exemplifies the dramatic chiaroscuro and anatomical realism characteristic of the Baroque period, with particular attention paid to the physiognomy of the protagonist **Fig 2.**

Figure 2. David Bearing the Head of Goliath

Source: https://www.wga.hu/html_m/o/oost/elder/david.html

Historical Context: Created during the Counter-Reformation era (circa late 16th to early 17th century), this artwork reflects the Catholic Church's renewed emphasis on didactic and emotionally evocative religious imagery.

Observed Clinical Manifestations: Upon detailed visual inspection, Goliath exhibits several morphological traits suggestive of acromegaly or mild craniofacial dysostosis. These include frontal bossing, increased mandibular prominence, broad nasal bridge, and thickened lips. Although artistic idealization of heroic figures was common, the level of detail in soft tissue contours and proportional disproportionality aligns with clinical phenotypes observed in chronic growth hormone excess.[13] This representation predates the formal medical description of acromegaly by more than two centuries, offering a compelling example of iconographic evidence of endocrine disease in pre-modern art.

Hans Holbein the Younger's Portrait of an Elderly Man

Artist and Work Description: This oil-on-wood panel painting, attributed to Hans Holbein the Younger (circa 1540–1545), is a masterful Renaissance portrait that exemplifies the artist's meticulous attention to anatomical accuracy and individualized facial characterization **Fig 3**. Holbein, a key figure of the Northern Renaissance, was renowned for his precise rendering of human expression and physiological detail.[14]

Historical Context: Produced during the German Reformation, this portrait likely represents a civic or ecclesiastical dignitary from the upper bourgeoisie or clergy. The Renaissance period emphasized empirical observation and classical ideals of proportion,

which allowed artists to depict not only aesthetic ideals but also pathophysiological deviations with high fidelity.

Figure 3. Portrait of an Elderly Man.

Source: https://www.mauritshuis.nl/en/our-collection/our-genres/portraits

Observed Clinical Manifestations: The subject displays striking features consistent with advanced acromegaly, including pronounced prognathism, widened interdental spaces, thickened facial soft tissues, and enlarged hands. The presence of coarse skin texture and possible periosteal bone proliferation further supports the hypothesis of long-standing growth hormone hypersecretion.[15] Given the absence of modern diagnostic tools at the time, this portrait may represent one of the earliest documented cases of acromegaly in a non-royal individual, providing valuable insight into the historical prevalence of pituitary disorders.

3. ***Prolactin***. Iconographic evidence of hyperprolactinemia manifests primarily through galactorrhea representations in non-lactating subjects. Northern European genre paintings demonstrate anatomically precise depictions of pathological lactation in nulliparous women, often accompanied by characteristic amenorrhea-associated phenotypes including hirsutism and central adiposity distribution patterns. Simonetta Vespucci, the Venus depicted by Botticelli, presents a probable pituitary adenoma secreting prolactin and growth hormone with parasellar expansion.

"The Birth of Venus" by Botticelli

Artist and Work Description: The Birth of Venus, an iconic tempera on canvas painting attributed to Alessandro di Mariano di Vanni Filipepi, known as Sandro Botticelli, is one of the most emblematic masterpieces of the Italian Renaissance. Dated circa 1485,

this work was commissioned by the powerful Medici family and exemplifies the revival of classical antiquity themes during the Quattrocento. The painting portrays the goddess Venus emerging fully formed from the sea, standing on a giant shell, symbolizing both divine beauty and spiritual rebirth **Fig 4.**[16]

Figure 4. Allegorical Portrait of a Woman Simonetta Vespucci

Source: https://www.endocrinepractice.org/article/S1530-891X(20)35203-4/abstract

Historical Context: Created in the late 15th century, The Birth of Venus represents a turning point in European art history, bridging pagan mythology with Christian allegory. It was produced during a period of intellectual and artistic flourishing in Florence, where artists were increasingly influenced by ancient Greco-Roman sculptures and philosophical concepts. The depiction of Venus, inspired by classical statues such as the Venus Pudica, aligns with Renaissance humanism's emphasis on idealized human form and moral symbolism.

Observed Clinical Manifestations: Supporting evidence for the theoretical framework suggesting Simonetta's presentation consistent with a dual-hormone pituitary adenoma (somatotroph-lactotroph) emerges through documented morphological alterations observable across sequential artistic representations.[17] These progressive phenotypic modifications demonstrate temporal evolution, achieving particular clinical prominence in later portraiture where pathological lactation manifestations receive explicit iconographic treatment.

4. ***Cushing's disease***. Adrenocorticotropic hormone excess Cushing's disease manifestations appear in documented portraits. Cardinal features include centripetal obesity, moon facies, purple striae, and characteristic buffalo hump deformity.

"The Nude Monster" by Juan Carreño de Miranda's

Artist and Work Description:

Juan Carreño de Miranda's portrait demonstrate exceptional clinical accuracy in depicting glucocorticoid excess phenotypes, with measurable central-to-peripheral fat distribution ratios consistent with hypercortisolism **Fig 5**.[18]

Figure 5. The Nude Monster

Source: https://www.museodelprado.es/coleccion/pintura-espanola

Historical Context: Painted during a period marked by intense interest in human anomalies at the Spanish Habsburg court, this portrait may have been part of a broader cultural tendency to collect, document, and display individuals with unusual physical traits. The inclusion of such figures in royal courts often blurred the lines between artistic representation, medical observation, and social marginalization. This context provides a plausible explanation for the creation of such a psychologically complex and visually detailed portrayal.

Observed Clinical Manifestations: Upon rigorous iconographic analysis, the subject displays a constellation of morphological traits highly consistent with Cushing's disease, a condition caused by chronic exposure to elevated cortisol levels, for endogenous pituitary pathology.[19]

Thyroid Disorders

1. ***Goiter***. Was the most frequently identified endocrine abnormality, present in artworks across periods from Renaissance to Baroque. Additionally, contemporary digital artworks depicted individuals with features consistent with Graves' disease, including exophthalmos and pretibial myxedema.

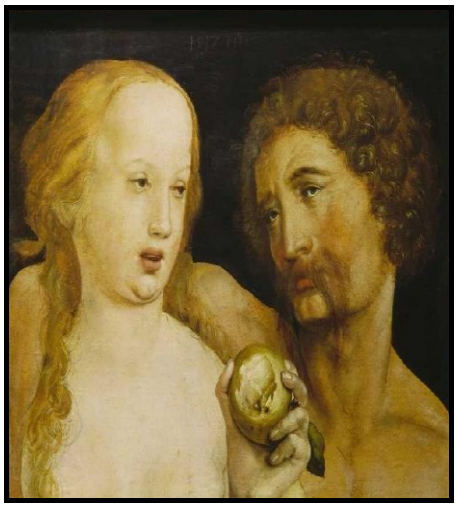
Holbein's Adam and Eve (1526)

Artist and Work Description: Adam and Eve, a tempera and oil on oak panel painting dated to 1526, is attributed to the German Renaissance master Hans Holbein the

Younger, one of the most precise and anatomically observant painters of his time.[20] This small-scale devotional work exemplifies Holbein's meticulous attention to detail, particularly in the rendering where Eve displays a diffuse goiter. The presence of goiter in Eve's portrayal provides valuable iconographic evidence of thyroid disease in early modern Europe, illustrating how artists incorporated real medical conditions into their work **Fig 6.**

Historical Context: Created during the early phase of the Protestant Reformation, Adam and Eve reflects the shifting theological landscape of 16th-century Europe. While Catholic iconography traditionally emphasized idealized, spiritual representations of biblical figures, emerging Protestant thought encouraged a more grounded, even critical portrayal of human nature, including its vulnerabilities and imperfections.[14] This ideological shift may have influenced Holbein's unusually detailed depiction of the human form in this work.

Figure 6. Adam and Eve (1526)



Source: https://pt.wahooart.com/@@/7YZN6F-Hans-Holbein-The-Younger-

Observed Clinical Manifestations: Clinically, the depiction of Eve in this work reveals a subtle but discernible enlargement of the anterior neck consistent with a diffuse goiter. The swelling is anatomically localized to the thyroid region, presenting as a smooth, bilateral neck prominence without overt nodularity, suggestive of endemic iodine deficiency.[21] This thyroid enlargement aligns with historical epidemiological data indicating widespread goiter prevalence in the population, especially among women, due to nutritional deficits. Holbein's faithful representation likely reflects direct

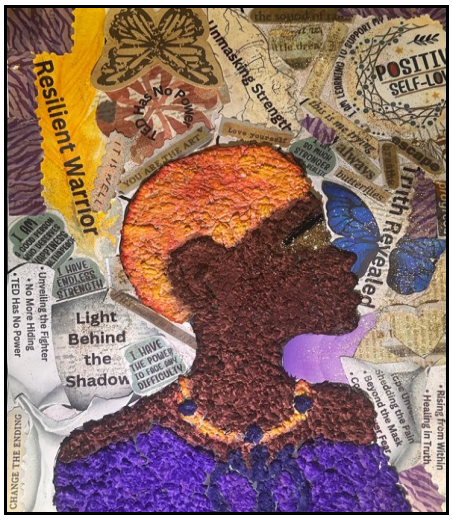
observation rather than symbolic exaggeration, as was common in Northern Renaissance art.

***Self-portrait* by Samantha Brown**

Artist and Work Description: This interdisciplinary artistic composition constitutes an introspective autobiographical representation, manifesting endurance and metamorphosis amid concurrent immunological disorders. Stratified tactile elements, saturated chromatic applications, and affirmative textual integration articulate a developmental narrative encompassing revelation, therapeutic progression, and personal agency restoration. The protagonist's thermal color spectrum establishes deliberate juxtaposition against dominant amethyst and aureate hues, symbolizing fortitude, luminosity, and transitional emergence from concealment toward authentic self-recognition and verity **Fig 7**.

Historical Context: Created in the early 21st century, this artwork emerges within a broader cultural movement emphasizing patient advocacy, medical transparency, and the intersection between art and medicine. In recent years, there has been a growing trend among contemporary artists with chronic conditions to use visual media as a means of documenting their lived experiences, challenging societal perceptions of illness, and fostering dialogue around underrepresented health issues. Brown's decision to depict her goiter openly contributes to the visibility of endocrine diseases and reflects a shift toward using art not only as aesthetic expression but also as a tool for clinical awareness and public health discourse.

Figure 7. Samantha Brown' *Self-portrait*



Source: https://tedcommunity.org/thyroid-eye-disease-ted-art/

Observed Clinical Manifestations: Hyperthyroidism is defined by the excessive synthesis and secretion of thyroid hormones, resulting in a systemic hypermetabolic state. Clinically, it manifests with cardiovascular symptoms including tachycardia and palpitations, alongside unintended weight loss despite hyperphagia, thermoregulatory dysfunction such as heat intolerance, and fine tremors. Neuromuscular involvement commonly presents as proximal muscle weakness and generalized fatigue, whereas neuropsychiatric symptoms frequently encompass anxiety, irritability, and mood disturbances. Cutaneous manifestations may feature warm, moist skin and, in cases of Graves' disease, localized pretibial myxedema characterized by dermal mucopolysaccharide deposition. Ophthalmic signs specific to Graves' orbitopathy include upper eyelid retraction, periorbital edema, and exophthalmos, reflecting inflammatory infiltration and tissue remodeling within the orbit.[22]

Gonadal Disorders

Throughout the history of Western art, visual representations have unintentionally captured morphological and behavioral traits associated with gonadal dysfunction. These depictions, often created without awareness of endocrinology, offer a unique window into the historical expression of disorders involving the testes and ovaries. From the Renaissance to contemporary times, several artworks exhibit visual cues suggestive of gonadal dysgenesis, hyperandrogenism, gynecomastia, hypogonadism, and other reproductive endocrine pathologies.

1. ***Gonadal dysgenesis***. The artist's represents female forms with absent or asymmetric breasts, distorted genital contours, and elongated limbs, features that may suggest chromosomal abnormalities such as Turner syndrome, or premature ovarian insufficiency. These representations, while not literal, convey somatic deviations linked to gonadal dysgenesis.[23]

Half-Length Female Nude (1930s) by Pablo Picasso

Artist and Work Description: Half-Length Female Nude is an oil on canvas painted by Pablo Picasso in 1906 during his transitional phase between the Rose Period and the advent of Cubism.[24] The female figure in Half-Length Female Nude exhibits several phenotypic included a broad, webbed neck and a relatively short stature suggested by the compact torso and limb proportions. The facial morphology is angular and flattened, and a somewhat underdeveloped jawline, features consistent with gonadal dysgenesis and associated craniofacial anomalies seen in Turner syndrome **Fig 8**.

Figure 8. Half-Length Female Nude

Source: https://www.artic.edu/artworks/11294/half-length-female-nude

Historical Context:

Created in the early 20th century, this work emerges at a time when Picasso was experimenting with form and abstraction, moving away from the melancholic themes of his Blue Period toward more fragmented and geometric depictions. The painting anticipates Cubism's analytical deconstruction of the human figure, reflecting broader modernist trends in European art. While Picasso's style abstracts and distorts anatomical realism, the presence of these features may reflect either a deliberate clinical observation or an artistic exploration of atypical human forms. Given Picasso's interest in "the other" and marginalized figures, this artwork serves as a compelling example of how endocrine pathologies such as Turner syndrome can be iconographically represented through modernist aesthetics.[25]

Observed Clinical Manifestations: Gonadal dysgenesis, including Turner syndrome, manifests clinically with primary amenorrhea, delayed or absent puberty, and infertility due to gonadal failure and hypergonadotropic hypogonadism. Patients with Turner syndrome (45,X or mosaic variants) often present with short stature, gonadal streaks, and characteristic somatic features, while those with 46,XY gonadal dysgenesis (Swyer syndrome) exhibit female external genitalia with nonfunctional streak gonads and normal Müllerian structures. Clinical signs that align with classic Turner syndrome phenotypes, include short stature, webbed neck, and hypoplastic secondary sexual features due to monosomy X or related chromosomal abnormalities.[26] Both conditions carry an elevated risk of gonadal tumors, particularly gonadoblastoma and dysgerminoma, especially in the presence of Y chromosome material. Imaging typically

reveals absent or hypoplastic gonads, and endocrine profiles show elevated LH and FSH levels. Early diagnosis and management, including prophylactic gonadectomy in high-risk cases and hormone replacement therapy, are essential to prevent malignancy and induce secondary sexual characteristics.[27]

2. ***Hyperandrogenism***. The portrayal of hyperandrogenism in historical art offers a unique lens through with to examine societal perceptions of endocrine disorders long before the advent of modern medical terminology. In works such as "The Bearded Woman Breastfeeding", an anonymous 17th-century painting housed at the Musée des Beaux-Arts de Valenciennes, the presence of hirsutism combined with lactation suggests a visual narrative that may reflect an underlying condition such as congenital adrenal hyperplasia or polycystic ovary syndrome (PCOS). These depictions challenge contemporary assumptions about the historical visibility of androgen excess in women, indicating both fascination and ambivalence toward individuals whose phenotypes deviated from gendered norms of appearance and behavior. While not explicitly diagnosed, such figures were often exhibited in cabinets of curiosity or depicted in emblematic prints, reinforcing their status as medical and social anomalies.[28] The juxtaposition of maternal imagery with virilizing traits underscores early modern attempts to reconcile biological complexity within moral and aesthetic frameworks.

The Bearded Woman Breastfeeding by Jusepe de Ribera

Artist and Work Description: "A Woman with a Beard Breastfeeding", often attributed to the Spanish Baroque painter Jusepe de Ribera, exemplifies the 17th-century fascination with human anomalies and the interplay between naturalism and moral allegory. The painting portrays a bearded woman in the intimate act of breastfeeding, rendered with striking realism and chiaroscuro technique characteristic of Ribera's style **Fig 9**.

Figure 9. The Bearded Woman Breastfeeding

Source: https://wtfarthistory.com/post/10240417642/a-bearded-woman-breastfeeding

Historical Context: While the work's attribution remains debated, it reflects the period's interest in atypical human conditions, often exhibited in cabinets of curiosities or interpreted through contemporary medical and theological frameworks. The figure's dual embodiment of maternal tenderness and physical divergence may symbolize both divine mystery and societal ambivalence toward individuals who deviated from normative gender and anatomical expectations. Such representations were not only artistic endeavors but also visual commentaries on early modern understandings of biology, morality, and human diversity.

Clinical Manifestations of Hyperandrogenism: Hyperandrogenism is a key endocrine feature in women, most commonly associated with PCOS, and presents with a spectrum of clinical signs including hirsutism, acne, alopecia, and menstrual irregularities.[29] Hirsutism, defined as excessive terminal hair growth in androgen-dependent areas, is the most prevalent and distressing manifestation, affecting up to 70% of women with PCOS. Acne vulgaris occurs due to increased sebum production stimulated by androgens, particularly dihydrotestosterone, and affects approximately 15–20% of hyperandrogenic women. Androgenetic alopecia, although less specific, is observed in up to 40% of women with hyperandrogenism and correlates with elevated serum androgen levels.[30] These symptoms significantly impact quality of life, contributing to psychological distress, reduced self-esteem, and social anxiety, underscoring the importance of timely diagnosis and multidisciplinary management.[31]

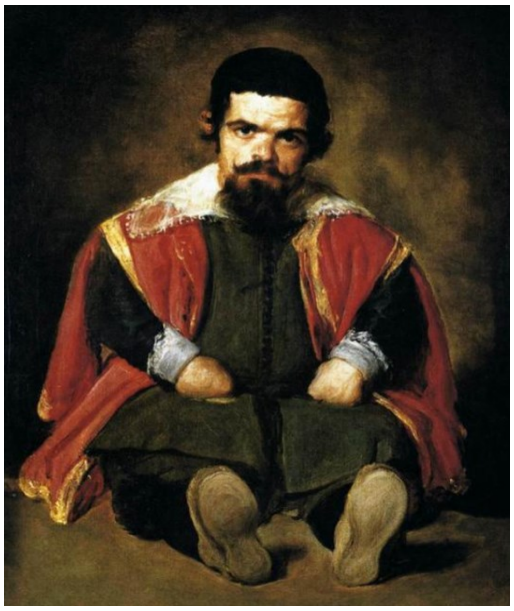
3. ***Hypogonadism***. Characterized by deficient testosterone production, has intriguingly been suggested as a possible underlying condition reflected in the portrayal of certain historical figures in classical artworks. Some art historians and medical scholars propose that physical features depicted in renowned paintings—such as diminished secondary sexual characteristics or altered body composition—may correspond to clinical signs of hypogonadism, offering a retrospective lens on the subject's health status.[32] This intersection of endocrinology and art history not only enriches the interpretative narratives of these masterpieces but also underscores how medical conditions might subtly influence artistic representation.

"The Dwarf Sebastian de Morra" by Diego Velázquez

Artist and Work Description: "Don Sebastián de Morra" (c. 1645), attributed to the Spanish Baroque master Diego Rodríguez de Silva y Velázquez, stands as one of the most compelling portraits from the court of King Philip IV of Spain. The painting depicts Sebastián de Morra, a court dwarf and favorite of the monarch, seated in a dignified yet enigmatic pose, dressed in a dark robe with a prominent collar, and gazing directly at the viewer with psychological intensity. Velázquez's mastery of chiaroscuro, combined with his nuanced rendering of texture and light, elevates the subject beyond mere curiosity to that of a psychologically complex individual **Fig 10**.

Historical Context: "Don Sebastián de Morra", painted circa 1645, emerges from the cultural and socio-political milieu of Spain's Golden Age, a period marked by both artistic flourishing and imperial decline. During this time, European courts, particularly in Habsburg Spain, maintained individuals with distinctive physical traits—often referred to as "dwarfs" or "court dwarves"—as symbols of curiosity, entertainment, and even political symbolism. Sebastián de Morra, the subject of Velázquez's portrait, was a court attendant in the entourage of King Philip IV, whose patronage of the arts fostered an environment where realism and human complexity were increasingly explored in visual representation. Unlike earlier depictions that emphasized caricature or exoticism, Velázquez's portrayal reflects a nuanced engagement with individuality, dignity, and psychological depth, aligning with broader Renaissance and Baroque shifts toward humanistic representation.

Figure 10. "The Dwarf Sebastian de Morra"



Source: https://www.wikiart.org/en/diego-velazquez/don-sebastian-de-morra

Clinical Manifestations of Hypogonadism: Hypogonadism in adult men encompasses a spectrum of clinical manifestations arising from deficient testosterone production or impaired gonadotropin signaling, often resulting in both sexual and systemic physiological disturbances. Common symptoms include reduced libido, erectile dysfunction, decreased muscle mass, increased visceral adiposity, and diminished energy levels, reflecting the hormone's broad metabolic and androgenic roles. Mood alterations such as depression, irritability, and cognitive decline are also frequently reported, underscoring the influence of testosterone on central nervous system function.[33] Physical signs may include loss of body hair, gynecomastia, and osteopenia or osteoporosis due to the essential role of androgens in bone remodeling.[34] These manifestations vary in severity depending on the age of onset and etiology-whether congenital, as in Klinefelter syndrome, or acquired through disease, medication, or aging—and require a comprehensive diagnostic approach integrating clinical evaluation and biochemical confirmation.[35]

FINAL CONSIDERATIONS

Art has long transcended its aesthetic function, serving as an unintentional yet valuable chronicle of human health and disease. This study highlights how visual representations in classical and contemporary art can offer insightful glimpses into the historical presence of endocrine disorders, often predating clinical descriptions by

centuries. By identifying morphological features consistent with known hormonal pathologies, this analysis bridges art history and medical science, reinforcing the value of interdisciplinary approaches in understanding disease evolution. These findings affirm that artistic depictions are not only cultural artifacts but also potential repositories of early clinical observation, enriching our comprehension of endocrinology's historical landscape.

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