

Dermatologic Manifestations of Underlying Endocrinopathy

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| Disorder | Cutaneous Manifestations | Systemic Manifestations | Lab Abnormalities |
|---|--|--|---|
| Acromegaly | Acanthosis nigricans; Acrochordons (skin tags); Coarsened face with accentuated creases; Cutis verticis gyrata; Doughy skin; Hyperhidrosis; Hypertrichosis (does not affect beard); Macroglossia; Oily skin; Thick and hard nails | Acral growth; Broad nose; Carpal tunnel syndrome; Colonic polyps; Deep voice; Galactorrhea; Headache; HTN; Hypogonadism; Joint pains, Organomegaly; Pre-pubertal gigantism; Thick lips; Prognathism; Visual Δ ; Widened teeth spaces | \uparrow GH, \uparrow IGF-1 \uparrow Calcium in urine Oral glucose tolerance test: failure of GH production to \downarrow |
| Addison's Disease (Adrenocortical insufficiency) | Auricular calcification; Hair may darken; Hyperpigmentation; Longitudinal pigmented bands in nails; Loss of body hair (especially axillae); Mucosal pigmentation; Pigmented hand creases; Pigmented scars and nevi; Vitiligo | Fatigue \downarrow BP; Postural dizziness; Salt craving GI symptoms: Abdominal pain; Anorexia; Constipation; Diarrhea; Nausea; Vomiting Muscle weakness | \uparrow ACTH, \uparrow K^+ \downarrow Na^+ , \uparrow Ca^{+2} Metabolic acidosis Anemia Eosinophilia |
| Cushing's Syndrome | Acanthosis nigricans; Acne; Broad purple striae; "Cigarette paper" wrinkling dorsal hands and elbows (Liddle sign — can peel off with tape); Cutis marmorata; Easy bruising; Hirsutism; Telangiectasia; Thin dermis and epidermis; \downarrow Wound healing | Abdominal pain; Amenorrhea; Impotence; Buffalo hump; Central obesity; Exophthalmos; Facial plethora; HTN; Psychological changes; Moon facies; Short stature from kyphosis and osteoporosis; Weakness | Urinary Free Cortisol $> 3x$ normal, loss of normal diurnal rhythm in ACTH and Cortisol secretion. Failure of Cortisol to \downarrow after Dexamethasone suppression test. Glucose intolerance \uparrow Calcium in urine, \uparrow renal stones |
| Cushing's Disease (Pituitary excess of ACTH) | Acne Hirsutism Hyperpigmentation | As above; Tumor mass effect: visual field loss & headache | \uparrow ACTH, \downarrow K^+ , \uparrow Free Cortisol Urinary free Cortisol suppression after high-dose Dexamethasone (Differentiate from ectopic ACTH secretion: no cortisol suppression after high dose Dexamethasone) |
| Diabetes Mellitus Type 1: Autoimmune, lack of insulin secretion Type 2: Insulin resistance Obesity Normal insulin | Acanthosis nigricans; Bullous diabeticorum; Diabetic Dermopathy (pretibial pigmented patches); Foot Ulcers; Frequent fungal infections, especially Candida; Furuncles; Nail bed telangiectasia; Necrobiosis lipoidica diabeticorum; Pedal petechial purpura; Rubeosis faciei; Scleredema adutorum; Tight, thick, waxy skin; Vitiligo; Xanthomas; Yellow skin and nails | Polydipsia; polyuria; polyphagia; Retinopathy; Nephropathy; neuropathy: foot drop; postural hypotension; resting tachycardia; gastroparesis; erectile dysfunction; Charcot's arthropathy; cardiovascular disease; candidiasis and unusual infections. | FPG ≥ 126 mg/dl RPG ≥ 200 mg/dl Glucose in urine if glucose level > 180 mg/dl Abnormal A1C, abnormal lipids, hypertriglyceridemia, microalbuminuria. |
| Graves' Disease (Hyperthyroidism) | Acropachy (distal clubbing, swelling and periosteal thickening); Diffuse alopecia; Palmar erythema; Plummer's nail — onycholysis; Skin: moist (\uparrow sweating) & warm (\uparrow cutaneous blood flow); Vitiligo | Anxiety; Diarrhea; Goiter; Heat intolerance; Insomnia; Ophthalmopathy; Pretibial myxedema; Tachycardia; Tremor; Weight loss | \uparrow Free T4, \downarrow TSH, \uparrow FTI, \uparrow T3 Positive thyroid antibodies |
| Hashimoto's Thyroiditis | \downarrow Body Hair; Dry, brittle, coarse, and slow growing hair; Fine wrinkling; Loss of outer 1/3 of eyebrow (madarosis); Malar flush; Myxedema (mucopolysaccharides) in hands and periorbital; Nails: brittle, slow growing; Patchy and diffuse hair loss; Thin, cold, pale, dry skin | If Hypothyroid: Bradycardia; Cold intolerance; Constipation; Cretinism (in children): severe mental retardation, impaired growth; Menstrual irregularities; Protuberant abdomen; Somnolence; Weight gain, goiter, thyroid antibodies | \downarrow Free T4, \downarrow Total T4, \uparrow TSH, \uparrow Serum cholesterol + TPO AB |

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|--|--|---|---|
| Hyperparathyroidism | Deposition of Calcium Pruritus | Nephrocalcinosis; Osteitis fibrosa cystica; Renal calculi | 1°: ↑ PTH, ↑ Ca ²⁺ in serum and urine, ↓ serum Phosphorus, ↑ urinary Phosphorus 2°: ↑ PTH, ↓ serum Ca ²⁺ , ↑ serum Phosphorus |
| Hypoparathyroidism | Hair: coarse, sparse Nails: opaque and brittle with transverse ridges Skin: dry, hyperkeratotic, scaly, and puffy | Altered dentition: defective enamel/ dental hypoplasia; Chvostek's sign — contraction of muscle by tapping along facial nerve (sign of tetany) | ↓ PTH, ↓ Ca ²⁺ , ↑ Phosphorus EKG Changes: prolonged Q-T intervals and T-wave changes |
| Hypopituitarism | Loss of body hair; Pale skin (mucous membranes normal color); Scalp hair is fine, dry, & thin; ↓ Sebaceous secretions and sweating; Thin skin → fine wrinkling around eyes and mouth | Amenorrhea; Impotence; Infertility; If pituitary tumor: headaches and visual changes (diplopia, reading problems, field loss); Lack of energy | ↓ ACTH, ↓ Cortisol, ↓ LH and FSH ↓ TSH, ↓ GH, ↓ IGF-1 ↑ Prolactin → galactorrhea Symptoms will change depending on the hormonal deficiency |
| McCune-Albright Syndrome | Large irregular Coast of Maine-like Café-au-lait macules (CALM) | Hyperthyroidism; Polyostotic fibrous dysplasia; Precocious puberty | GNAS1 gene mutation; ↑ GH from pituitary adenomas ↑ Serum Alkaline Phosphatase ↑ Urinary Hydroxyproline |
| MEN I (Wermer Syndrome) Autosomal Dominant | Facial angiofibromas; Collagenomas, Confetti macules; CALM; Lipomas | Tumors or hyperplasia of: Pituitary; Parathyroid & Pancreas Gastrinoma → Z-E Syndrome Papillary CA Thyroid | MEN1 gene 11q13 (defect menin) ↑ Calcium, ↑ PTH ↑ Prolactin → amenorrhea, galactorrhea ↑ GH → acromegaly ↑ ACTH → Cushing's syndrome |
| MEN IIa (Sipple Syndrome) Autosomal Dominant | Lichen/ Macular amyloidosis interscapular | Parathyroid (hyperplasia or tumor) Pheochromocytoma Thyroid: Medullary CA | 10q11.2 RET (point mutation) ↑ Calcitonin, ↑ PTH, ↑ Ca ²⁺ |
| MEN IIb (III) (Wagenmann-Froeböse) Autosomal Dominant | Inverted lids (from thick corneal nerve); Marfanoid habitus; Multiple mucosal neuromas or ganglioneuromas, CALM | Pheochromocytoma Thyroid: Medullary CA | 10q11.2 RET (missense mutation) ↑ Calcitonin, ↑ Catecholamines, VMA, and Metanephrines |
| Pheochromocytoma | Flushing of face and forehead; Redness and cyanosis of the hands; ↑ Sweating | ↑ BP (10% malignant); Headaches; Palpitations; Sympathetic Crisis; Tremor | ↑ Catecholamines, VMA, and Metanephrines |
| Polycystic Ovarian Syndrome | Acanthosis Nigricans; Acne; Androgenic alopecia; Hirsutism; Nipple, perineum, axillae hyperpigmentation; Thickened and coarse pubic & axillary hair children | Amenorrhea (or oligo-menorrhea) Obesity Precocious puberty Short stature Polyeystic ovaries | ↑ LH, ↓ FSH ↑ Testosterone (Androgens) ↑ DHEA, hyperinsulinemia |

Abbreviations:

Δ = change; ACTH: Adrenocorticotropic Hormone; BP: Blood Pressure; CA: Carcinoma; Ca²⁺: Calcium; CALM: Café-au-lait macules; DHEA: Dehydroepiandrosterone; EKG: Electrocardiogram; FPG: Fasting Plasma Glucose; FSH: Follicle-Stimulating Hormone; FTI: Free Thyroxine Index; GH: Growth Hormone; GI: Gastrointestinal; HbA1c: Hemoglobin A1c; HTN: Hypertension; IGF-1: Insulin-like Growth Factor-1; K⁺: Potassium; LH: Luteinizing Hormone; MEN: Multiple Endocrine Neoplasia; Na⁺: Sodium; PTH: Parathyroid Hormone; RPG: Random Plasma Glucose; TPO AB: Thyroperoxidase Antibodies; TSH: Thyroid-Stimulating Hormone; VMA: Vanillylmandelic Acid; Z-E: Zollinger-Ellison

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