

Systemic Diseases with Oral Manifestations

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Amyloidosis

- Heterogeneous group of conditions
- Different types but essentially two forms
- Organ-limited (localized)
 - Senile cerebral: Alzheimer A β (pleated configuration)
 - Thyroid: Medullary carcinoma of the thyroid
 - Pancreas: Islets of Langerhans (DMII)
 - Heart
 - Prion diseases (PrP; resemblance of amyloid)
 - Rarely in the mouth; presents as nodule

Amyloidosis

- Systemic amyloidosis
 - Familial
 - Myeloma-associated
 - Hemodialysis-associated (A β 2m)

Familial Amyloidosis

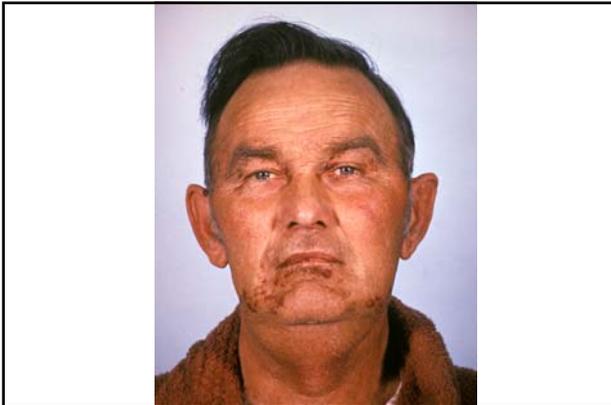
TYPE	DISTINGUISHING FEATURES	USUAL CLINICAL FEATURES
Transthyretin	Most common, worldwide	Neuropathy, Heart failure, Diarrhea, Kidney failure
Fibrinogen	United States, Europe	Hypertension, Kidney failure
Apolipoprotein AI	United States, Europe	Kidney failure

Familial Amyloidosis

Lysozyme	Europe, Canada	Kidney failure, Liver failure
Gelsolin	Finland	Corneal changes (eye), Occasionally heart and kidney disease
Cystatin C	Iceland	Intra-cranial hemorrhage
Apolipoprotein AII	United States, Russia	Kidney failure

Myeloma-associated

- AL type; light chains (λ)
- Older individuals
- Fatigue, weight loss, paresthesia, hoarseness, edema orthostatic hypotension
- Macroglossia
- Eyelids, retroauricular region, neck, lips
- Petechiae, ecchymoses
- Xerostomia and xerophthalmia



Secondary amyloidosis

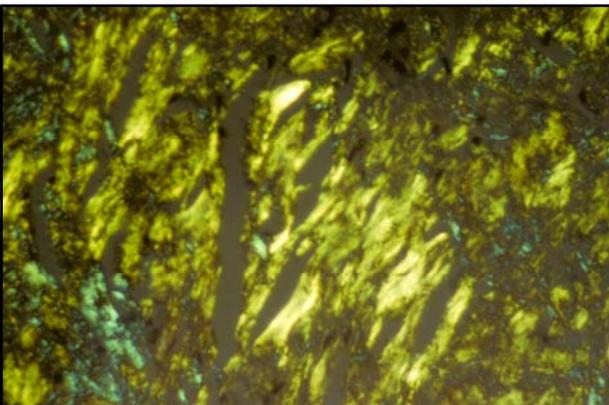
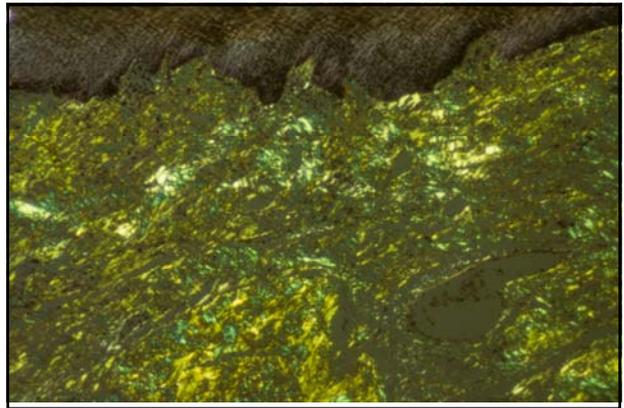
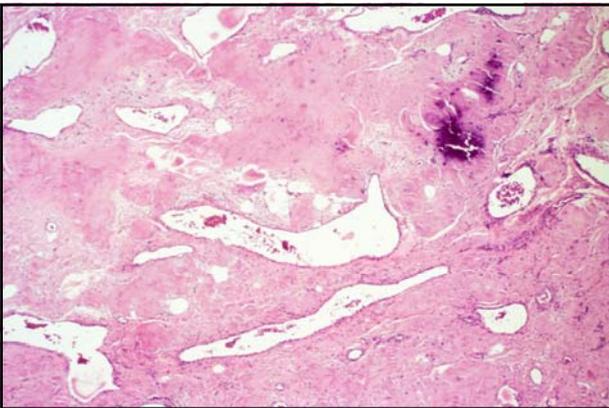
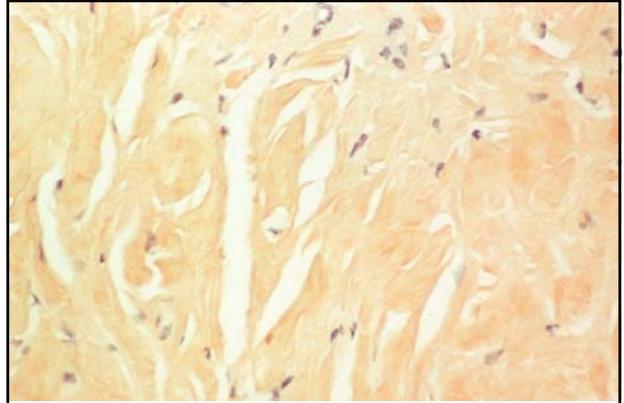
- Result of chronic inflammatory process
- Rare
- Liver, kidney spleen

Hemodialysis-associated amyloidosis

- Long history of renal dialysis
- Accumulation in the plasma
- Deposits in the carpal ligaments (compression of the median nerve)
- Deposits in the joints

Diagnosis

- Biopsy, special stains (Congo Red with polarization, crystal violet, thioflavine T), electron microscopy
- Depending on the clinical findings tests may reveal malfunction of organs



Vitamin A (retinol)

- Red and yellow vegetables, liver
- Fat-soluble
- Deficiency
 - Blindness due to ulceration
 - Problems in keratinization
- Hypervitaminosis
 - Bulging fontanelles (infants), bone pain or swelling, skin and hair changes and hair loss, skin peeling, **angular cheilitis-like**, yellow discoloration of the skin, higher sensitivity to sunlight, irritability, decreased appetite, vomiting, drowsiness, double vision (young children), gynecomastia (swelling of breast tissue in men), impotence and ejaculation failure

Vitamin B Complex Deficiency

- ALL Bs ARE WATER SOLUBLE
- Thiamin (B1)
 - Animal and vegetable sources
 - Probably maintains the proper function of neurons
 - Beriberi: Multiple neuritis (Wernicke's encephalopathy), congestive heart failure, generalized edema (tongue, gingiva)



Vitamin B Complex Deficiency

- Riboflavin (B2)
 - Milk, greens, fish, eggs, legumes
 - Oxidation-reduction
 - Glossitis, atrophic filiform papillae, fungiform become engorged
 - Paleness of lips
 - Angular cheilitis
 - Seborrheic dermatitis of especially nose and scrotum
 - Vascularization of cornea

Vitamin B Complex Deficiency

- Niacin (B3): oxidation-reduction
 - Eggs, milk, peanuts, whole grains
 - Poor diet, G.I. tract malabsorption, alcoholism, weight loss, appetite loss
 - Pellagra: Diarrhea-Dermatitis-Dementia-Death
 - Vague intestinal symptoms; bilateral symmetric, sharply outlined, roughened keratotic areas; mental confusion and forgetfulness
 - Hypervitaminosis: maculopathy

Vitamin B Complex Deficiency

- Oral manifestations (Niacin)
 - Fiery red and painful oral mucosa,
 - Profuse salivation
 - Desquamation of the epithelium
 - Pain and ulcerations of the interdental papillae → ANUG
 - Angular cheilitis



Vitamin B Complex Deficiency

- Pyridoxine (B6): balancing of Na and P, red blood cell production
 - Pyridoxine deficiency
 - Isoniazid is a pyridoxine antagonist
 - Used together to avoid CNS side effects and peripheral neuropathy
 - Weakness, dizziness, seizures
 - Oral manifestations
 - Cheilitis, glossitis

Vitamin C

- Vegetables and fruits
- Water-soluble
- Scurvy (inner city infants, elderly individuals)
- Inadequate collagen synthesis
 - Wound healing
 - Weakened vascular walls
 - CNS hemorrhage
- Oral manifestations
 - Spontaneous hemorrhage
 - Weak capillary support
 - Ulceration
 - Severe periodontal disease



Clinical History

- 71-year-old man with lower-extremity ecchymoses and gingivitis. He was a retired Army man living alone with a modest income. He had poor nutritional intake, had a history of 150 pack-years of smoking cigarettes, and consumed two glasses of red wine each day.





Vitamin E

- Vegetable oils, meats, nuts, cereals
- Fat soluble
- Rare; cholestatic disease in children
 - All fat soluble vitamins affected
- Neurologic disorders

Vitamin K

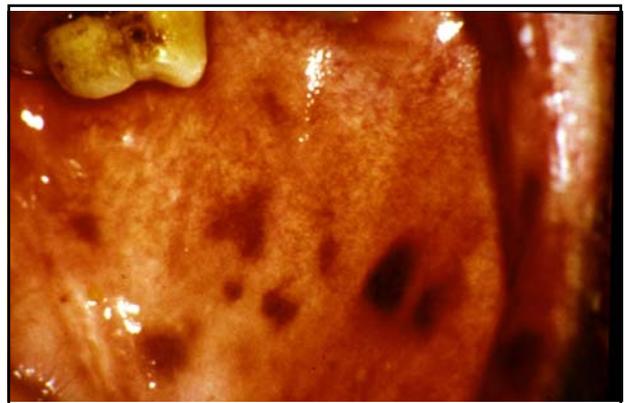
- Greens, meats, butter, intestinal bacteria
- Fat soluble
- Rare; cholestatic disease in children
 - All fat soluble vitamins affected
- Neurologic disorders

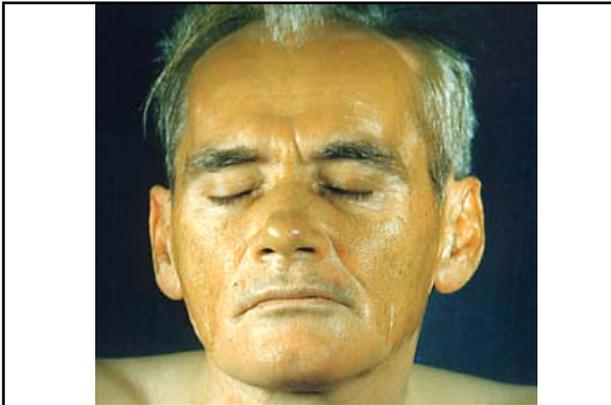
Adrenals

- Acute insufficiency of the adrenal cortex (Waterhouse-Friderichsen syndrome)
 - Fulminant meningococemia
 - Hypotension, generalized, pronounced purpura, DIC and death in 48-72 hours

Addison's disease

- Primary hypoadrenocorticism
- Chronic insufficiency of the adrenal cortex
- Autoimmune or due to tuberculosis, neoplasm, hemochromatosis.
- Bronzing of skin, mucous membranes pigmentation
- General debility - Diarrhea - Severe anemia





DIABETES MELLITUS

Inadequate secretion of insulin resulting in hyperglycemia, and glycosuria

- Decreased tissue resistance to infection
- Oral manifestations
 - Dryness, "burning" tongue, sensitive gingiva
 - Uncontrolled patients exhibit fulminating periodontitis, hemorrhagic gingival papillae
 - End stage diabetics can develop mucormycosis



Hypothyroidism

- "Cretinism" in children (primary; decreased function or absence of thyroid glandular tissue)
- "Myxedema" in adults (secondary; decrease in thyroid function due to decreased thyrotropic output by pituitary gland)

Oral manifestations

- Macroglossia caused by edematous infiltrate, edematous lips - Malocclusion
- Delayed tooth eruption; deciduous teeth are retained beyond the normal shedding time



Hyperthyroidism

Exophthalmic goiter (Grave's disease)

- Toxic adenoma

Oral manifestations

- Accelerated shedding of deciduous teeth and eruption of permanent teeth

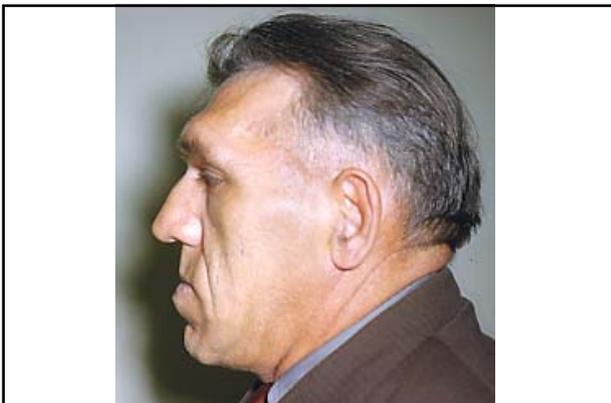


Gigantism and Acromegaly

- Increased production of growth hormone
 - Pituitary adenoma
- Before (gigantism) or after (acromegaly) the closure of epiphyseal plates
- Gigantism
 - Hypothyroidism, hypoadrenocorticism
 - McCune-Albright patients may account for ~20% of cases of gigantism

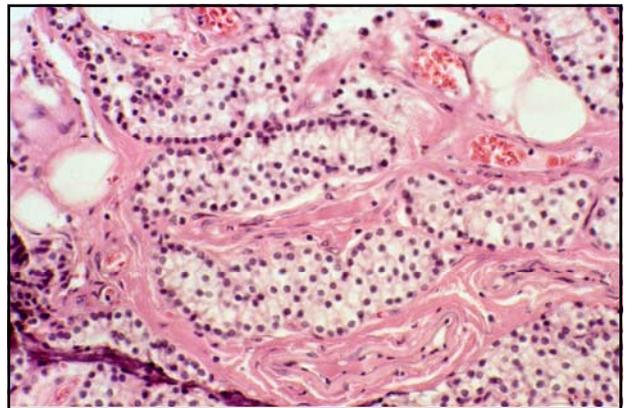
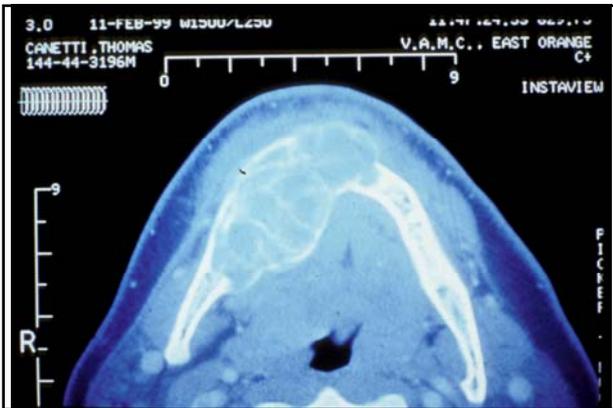
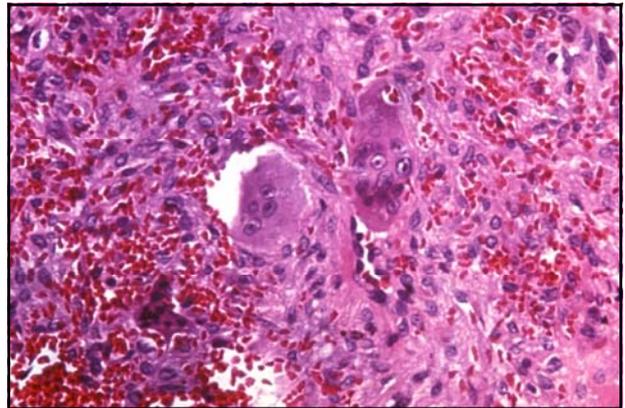
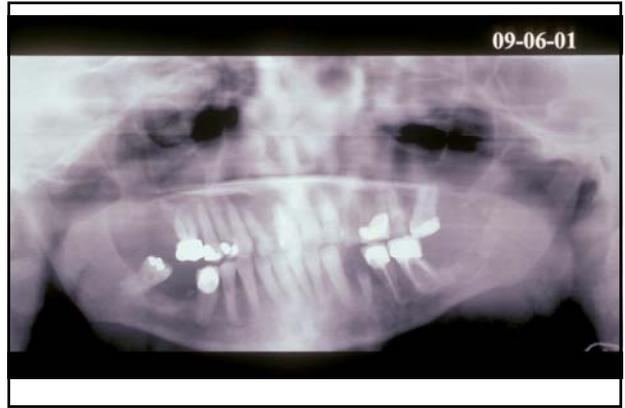
Gigantism and Acromegaly

- Acromegaly
 - Renewed growth of small bones
 - Hypertrophy of soft palate
 - Mandibular prognathism (apertognathia)
 - Diastema
 - Macroglossia



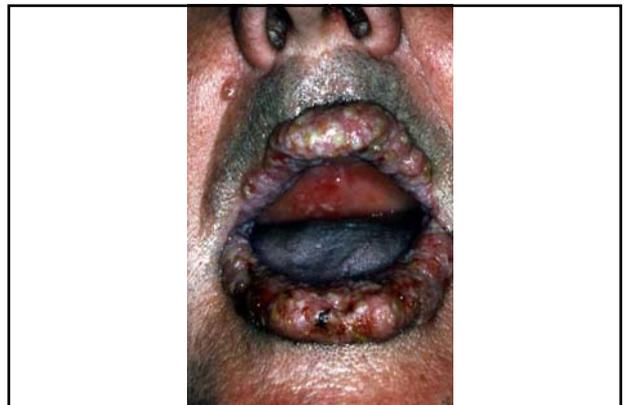
Hyperparathyroidism

- Primary
 - Adenoma (80%), hyperplasia, carcinoma
- Secondary
 - PTH produced as a result of chronic low levels of calcium in the serum (renal disease)
 - Kidney failure → vit. D deficiency → less calcium absorbed → less calcium in the serum → overproduction of PTH



Crohn's disease

- Increasing prevalence
- Proximal colon, distal portion of small bowel
- Anywhere in the GI tract
- Skin, eyes, joints
- Oral lesions may precede GI
 - Lesions of orofacial granulomatosis
 - Aphthous stomatitis (uncertain association)



Pyostomatitis vegetans

- Oral expression of Crohn's disease or ulcerative colitis; may precede GI symptoms
- Yellowish, snail track like linear lesions
- Oral discomfort is variable
- Biopsies show among other findings prominent eosinophilia



Uremic stomatitis

- Acute or chronic renal failure
- Painful mouth disorder featuring plaques on the buccal mucosa, tongue and floor of mouth
- Odor of ammonia or urine
- Renal dialysis may clear lesions
- Mild peroxide solution may eliminate lesions

