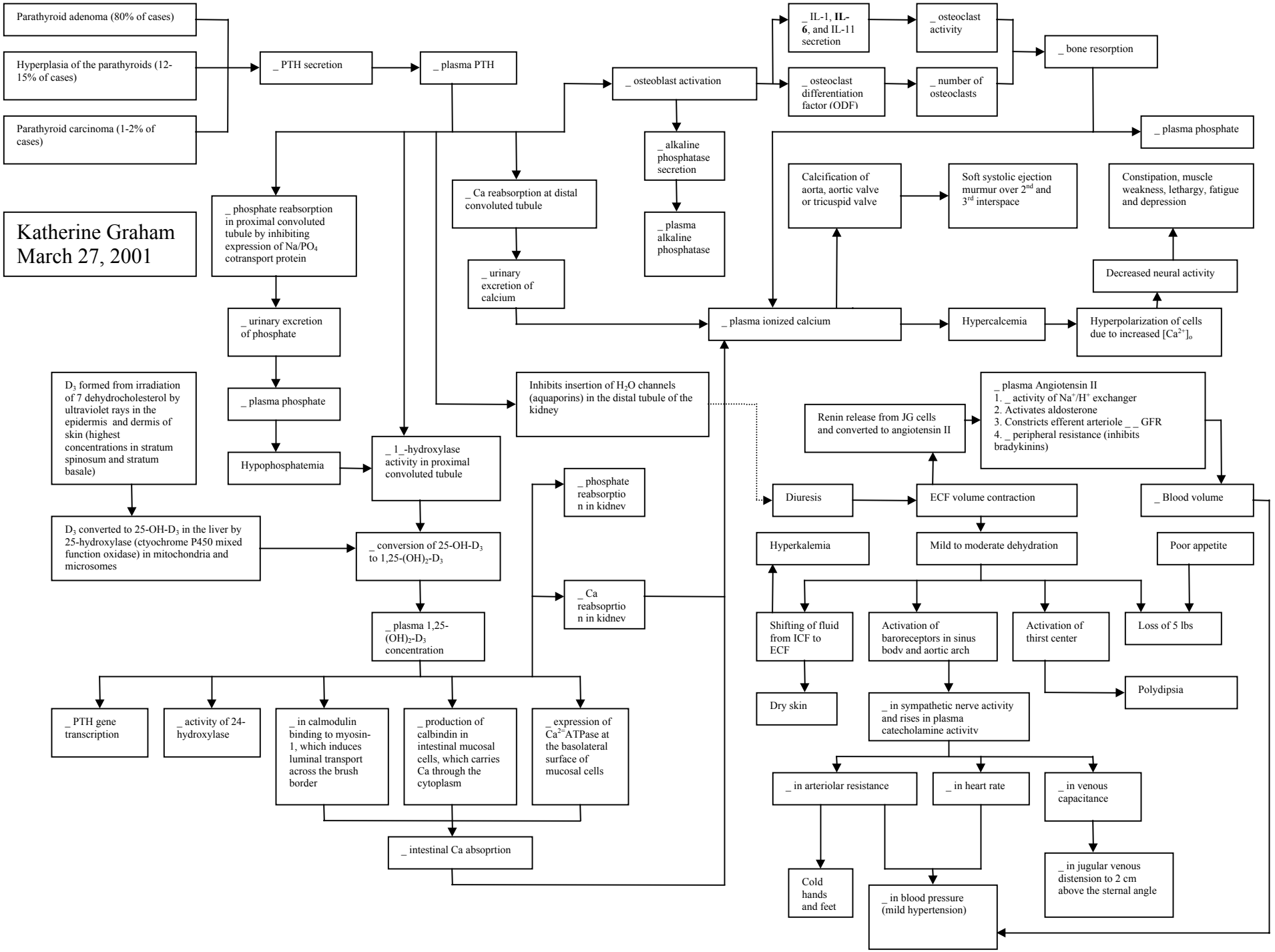
Parathyroid adenoma (80% of cases)
Hyperplasia of the parathyroids (12-15% of cases)
Parathyroid carcinoma (1-2% of cases)
_ PTH secretion
_ plasma PTH
_ osteoblast activation
_ IL-1, IL-6, and IL-11 secretion
_ osteoclast activity
_ bone resorption
_ osteoclast differentiation factor (ODF)
_ number of osteoclasts
_ plasma phosphate
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_ phosphate reabsorption in proximal convoluted tubule by inhibiting expression of Na/PO4 cotransport protein
_ Ca reabsorption at distal convoluted tubule
_ alkaline phosphatase secretion
_ plasma alkaline phosphatase
Calcification of aorta, aortic valve or tricuspid valve
Soft systolic ejection murmur over 2nd and 3rd interspace
Constipation, muscle weakness, lethargy, fatigue and depression
_ urinary excretion of calcium
Decreased neural activity
_ urinary excretion of phosphate
_ plasma ionized calcium
Hypercalcemia
Hyperpolarization of cells due to increased [Ca2+]o
D3 formed from irradiation of 7 dehydrocholesterol by ultraviolet rays in the epidermis and dermis of skin (highest concentrations in stratum spinosum and stratum basale)
_ plasma phosphate
Inhibits insertion of H2O channels (aquaporins) in the distal tubule of the kidney
Renin release from JG cells and converted to angiotensin II
_ plasma Angiotensin II
1. _ activity of Na+/H+ exchanger
2. Activates aldosterone
3. Constricts efferent arteriole _ _ GFR
4. _ peripheral resistance (inhibits bradykinins)
Hypophosphatemia
_ 1_-hydroxylase activity in proximal convoluted tubule
_ phosphate reabsorptio n in kidnev
Diuresis
ECF volume contraction
_ Blood volume
D3 converted to 25-OH-D3 in the liver by 25-hydroxylase (ctyochrome P450 mixed function oxidase) in mitochondria and microsomes
_ conversion of 25-OH-D3 to 1,25-(OH)2-D3
Hyperkalemia
Mild to moderate dehydration
Poor appetite
_ Ca reabsoprtio n in kidnev
Shifting of fluid from ICF to ECF
Activation of baroreceptors in sinus body and aortic arch
Activation of thirst center
Loss of 5 lbs
_ plasma 1,25-(OH)2-D3 concentration
Dry skin
Polydipsia
_ PTH gene transcription
_ activity of 24-hydroxylase
_ in calmodulin binding to myosin-1, which induces luminal transport across the brush border
_ production of calbindin in intestinal mucosal cells, which carries Ca through the cytoplasm
_ expression of Ca2+ATPase at the basolateral surface of mucosal cells
_ in sympathetic nerve activity and rises in plasma catecholamine activity
_ in arteriolar resistance
_ in heart rate
_ in venous capacitance
_ intestinal Ca absoprtion
Cold hands and feet
_ in jugular venous distension to 2 cm above the sternal angle
_ in blood pressure (mild hypertension)