

Biochemical findings in differential diagnosis

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BIOCHEMICAL FINDINGS IN DIFFERENTIAL DIAGNOSIS

Past history + clinical picture are the basement for actual diagnosis !

Na (136-144 mmol/l), K (3,8 – 5,1 mmol/l)
Cl (96 – 104 mmol/l)

Examples:

- Impairment of internal milieu (elderly)
- Decompensation of liver cirrhosis
- Arterial hypertension (drugs, primary disease)
- Adrenal insufficiency



Urea (3,8 – 8,3 mmol/l)
Creatinine (65 – 112 umol/l)

Renal cause (kidney failure)

X

Extrarenal cause (dehydration)

Calcium (2,15 – 2,65 mmol/l)
Phosphates (0,65 – 1,65 mmol/l)

Syndrome of osteomalatia (low Ca, normal or low phosphates, high ALP)

Syndrome of hyperparathyreosis (high Ca, low phosphates)

Syndrome of renal osteodystrophy (dialysis)



Case 1 (1980)

Male, age 50 yrs,
5 yrs progressive deterioration of walk,
muscle weakness
repeatedly examined with EMG, scintigraphy etc.
Dg: amyotrophic lateral sclerosis

Sent to our department:

Ca 2,01 mmol/l, PO4: 0,70 mmol/l, ALP 5,4 ukat/l

X-ray: pseudofractures, L-zones



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Ca 2,01 mmol/l, PO₄: 0,70 mmol/l, ALP 5,4 ukat/l

X-ray: osteomalatia (pseudofractures, L-zones)

Dg: hypophosphatemic osteomalatia

Treatment: Ca gluconicum, vit. D



ENZYMES & ISOENZYMES

Liver

ALT, AST – „indicator enzymes“

ALP, GGT – „excretion enzymes“

CHE – „secretion enzymes“ (also: albumin)

Myocardium

CK (MB, MM, BB isoenzymes)

ALT, AST, LD

now especially: I a T-troponines

Bone

ALP (B-iso)

(osteoblasts

Which tumor?

ACP

x

osteoclasts)

Which tumor?

Pancreas

AMS (P-iso, S-iso, macro-AMS), lipase



Case 2 (1986)

Male, 23 yrs

**alcohol abuse, sleep during the night,
morning: increased diameter of one LL, pain,**

Examination:

creatinine 600 $\mu\text{mol/l}$, CK 1000 ukat/l ,



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Dg: acute renal failure, myoglobinuric nephropathy,

Treatment: acute dialysis programme



PLASMA GLUCOSE

a) Hyperglycemia (clinical picture, conditions)

DIABETES MELLITUS

- 1) Signs + random glucose $> 11,0$ mmol/l (200 mg/dl)
- 2) Fasting glycemia $\geq 7,0$ mmol/l (126 mg/dl)
- 3) 2h PG at oGTT $\geq 11,1$ mmol/l (200 mg/dl)

PREDIABETES

- 1) Impaired glucose tolerance (IGT) 7,8-11,0 mmol/l in 2h
- 2) Impaired fasting glucose (IFG) 5,6-6,9 mmol/l



PLASMA GLUCOSE

b) HYPOGLYCEMIA (evaluate within the knowledge of actual state and conditions)

I. Fasting

Increased glucose output (by hyperinsulinemia)

- exogenously caused (treatment, hypoglycemia factitia)
- endogenously caused (insulinoma, nesidioblastosis)

Lowered glucose production

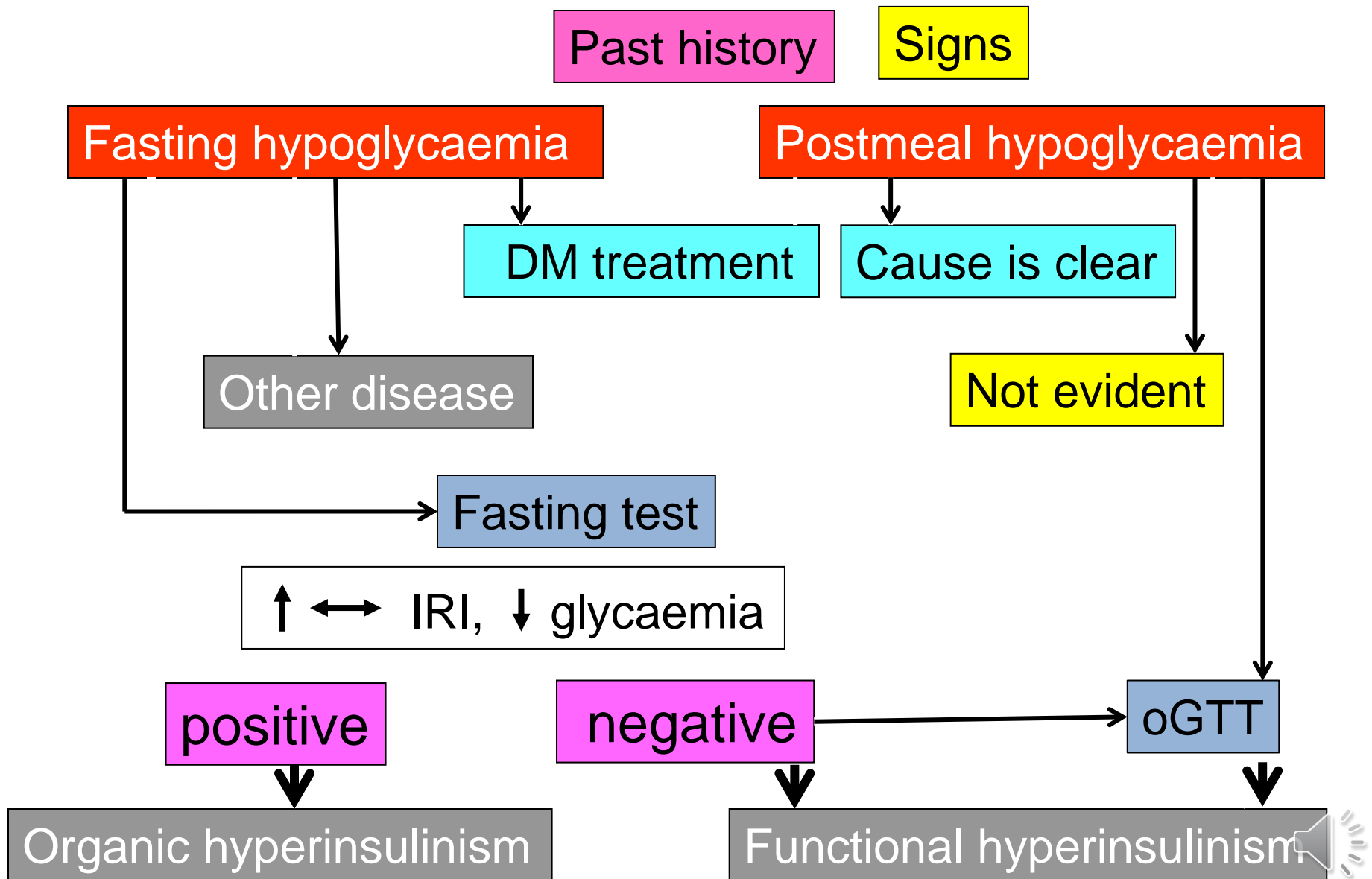
- liver disease
- endocrine hypofunctional conditions
- alcohol consumption

II. Postprandial

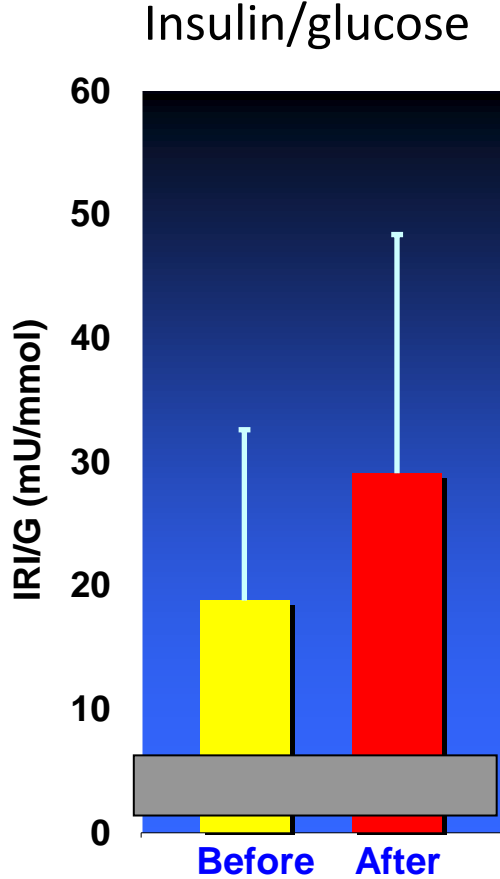
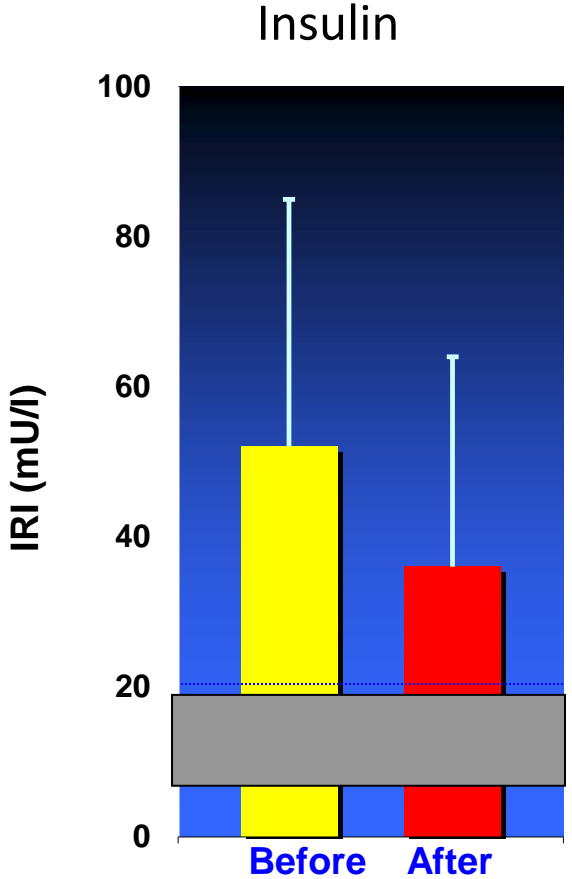
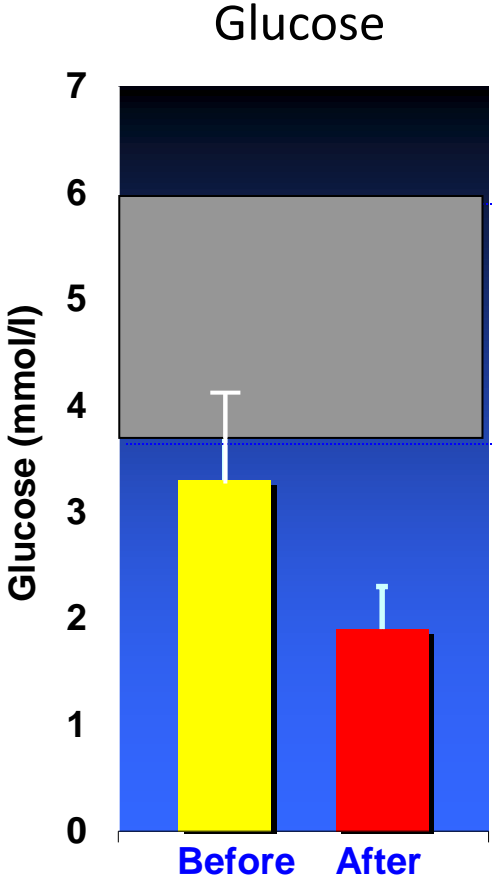
- functional, stomach resection



ALGORITHM FOR HYPOGLYCAEMIA DIAGNOSIS



Fasting test



Positive: 100 % 91 % 98 %



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17-1AR-91 12:03

130

LM% 0

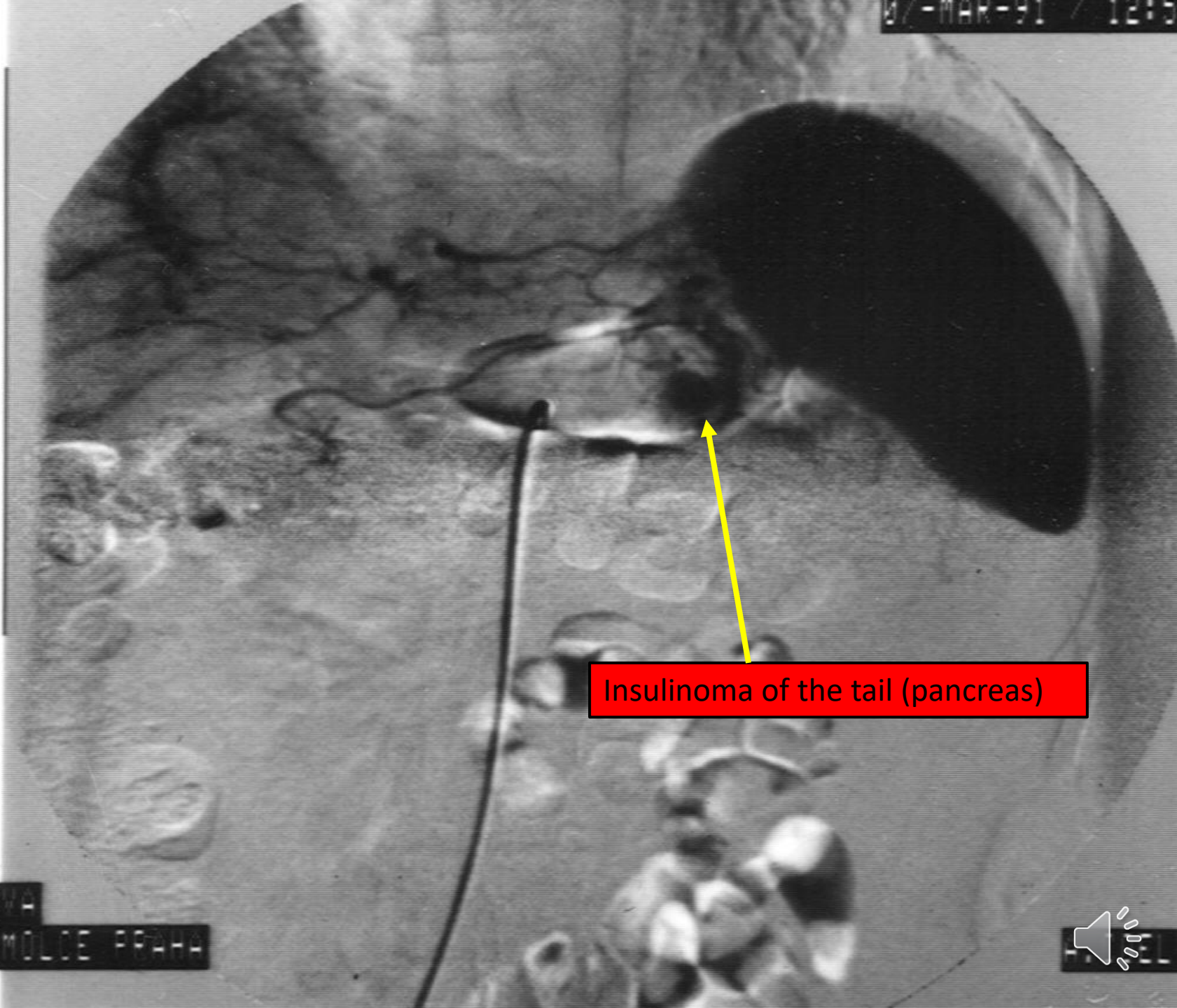
INV

IMAGE
19

MASK
5

F 65

DOC DRUGOVA
NSP NA HOMOLCE PRAHA



Insulinoma of the tail (pancreas)



ING HANZAL JIRI 47

1544/91

A.COELIACA

07-MAR-91 / 12:52:35

780

2x

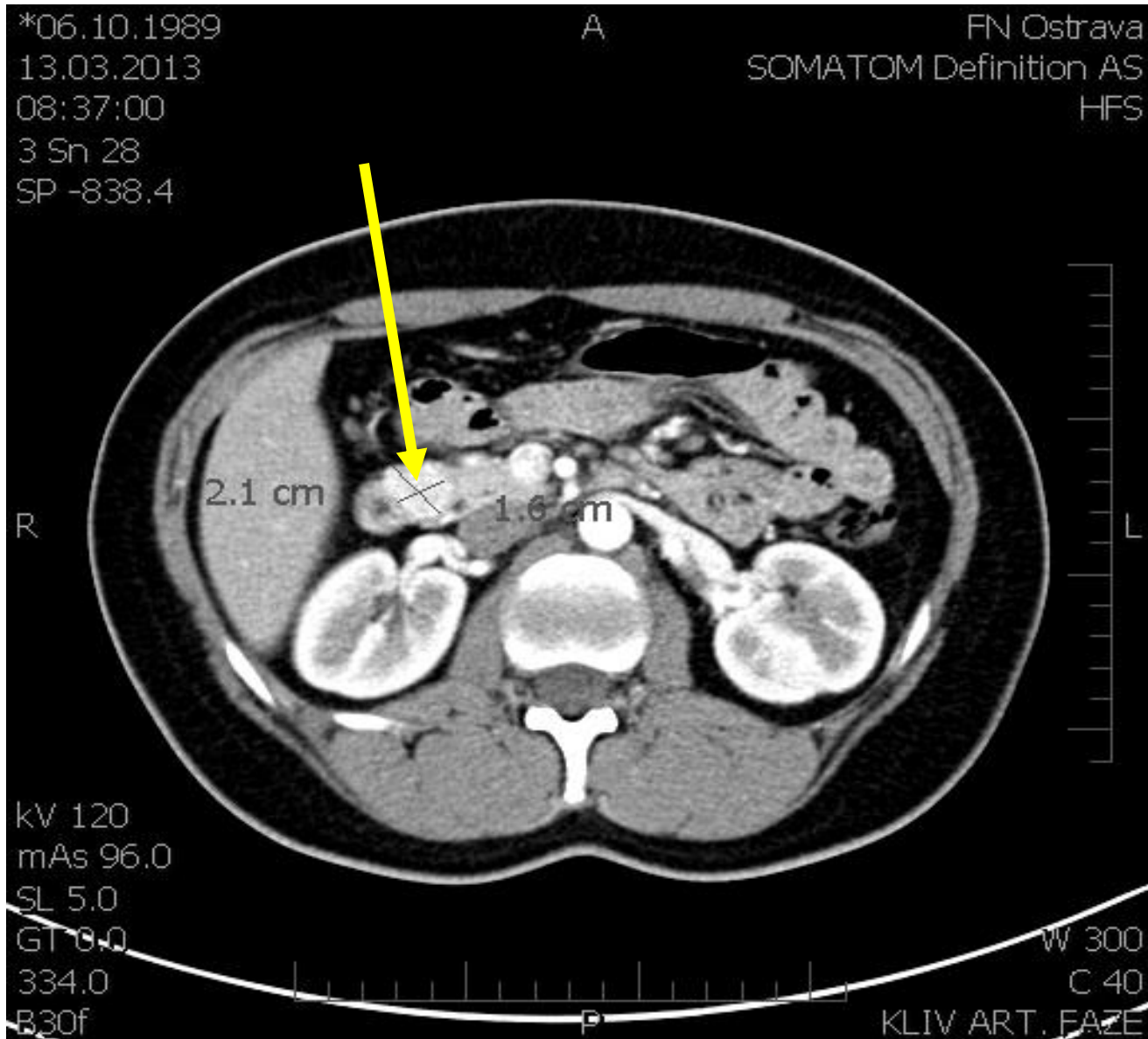
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DOC DRUGOVA
NsP NA HOMOLCE PRAHA

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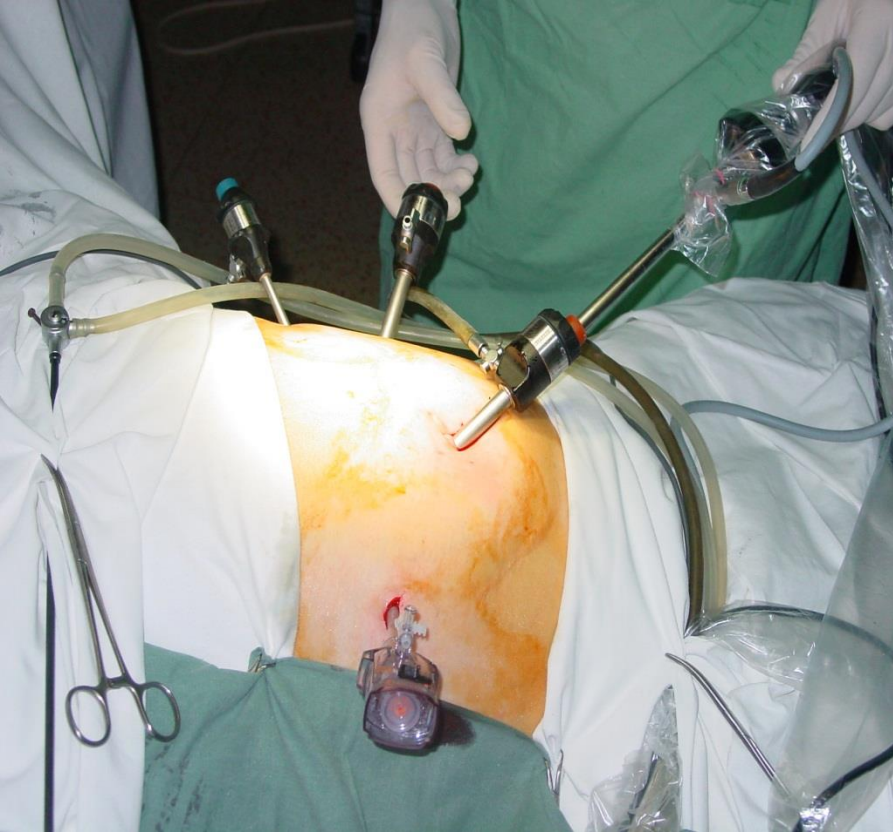


CT scan (M.B., f, b. 1989)



Octreoscan

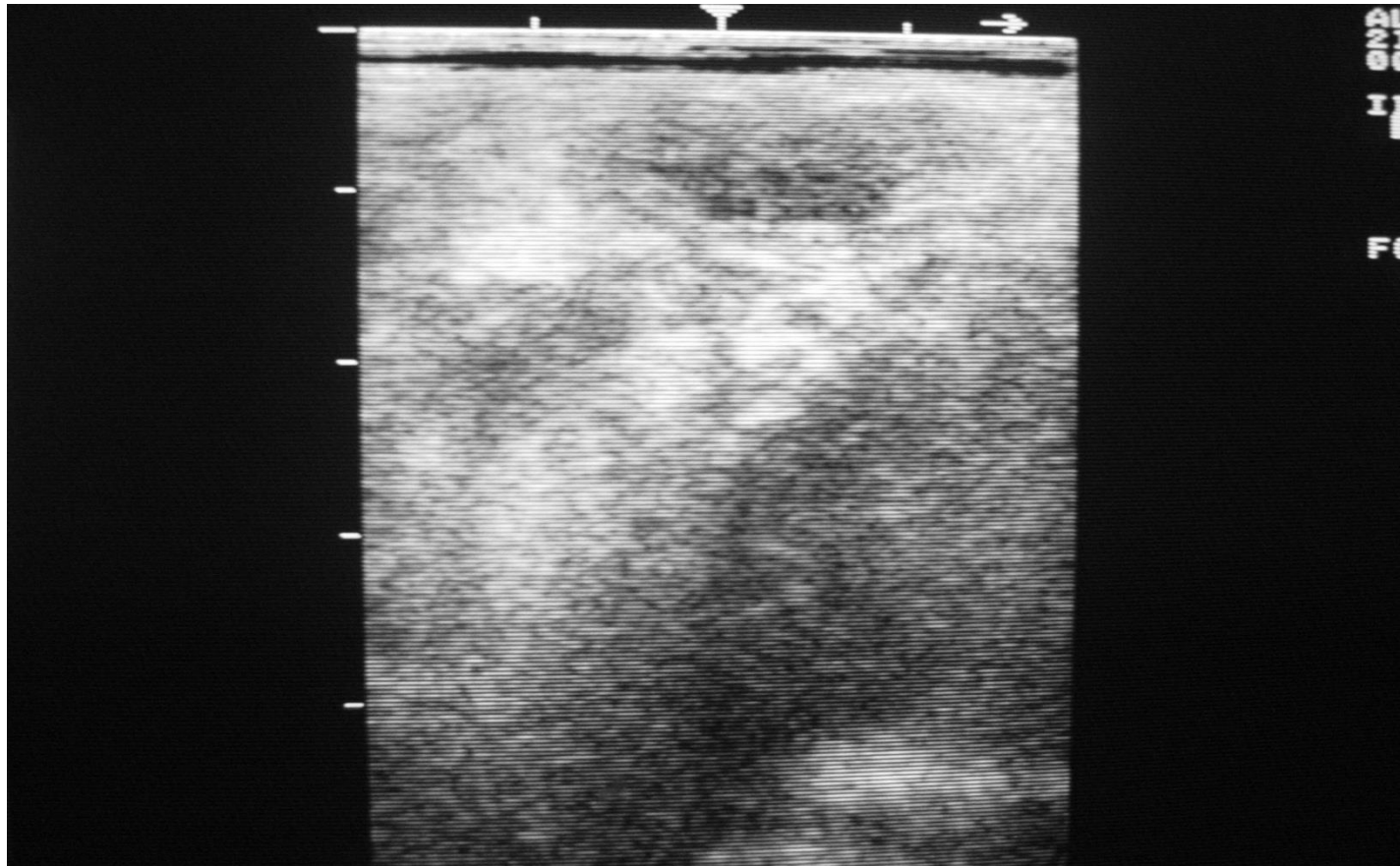




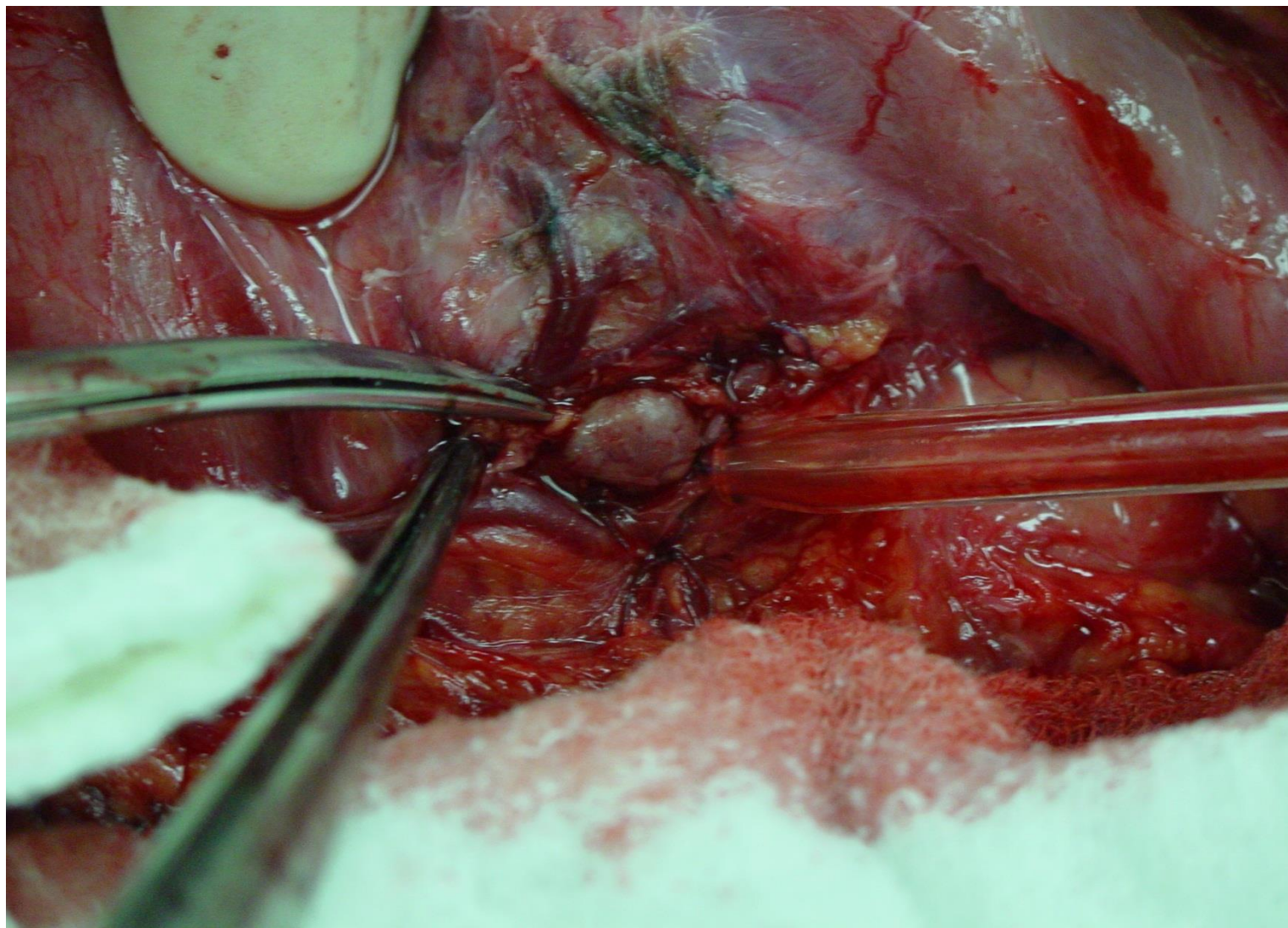
Laparoscopic surgery



Peroperative US



Enucleation of an insulinoma



Diagnostic algorithm of organic hyperinsulinism

DIAGNOSIS

Clinical suspicion

Biochemical examination

Diagnosis confirmed

Diagnosis unconfirmed

Topographic localisation

CT Angiography Endosonography

Localisation confirmed

Localisation unconfirmed

Surgery

Insulinoma removed

Insulinoma unremoved

Conservative treatment

TREATMENT



From the clinical history to the treatment (general algorithm)

