# In the name of God

## Case presentation

Presentation By Dr. Ameneh Ahmadi

22th Khordad 1402

# Patient ID:

- A 66-year-old woman
- Born and live in Tehran
- Married
- Education: uneducated
- Source of history: patient, reliable

# Chief Complaint:

- She was referred for evaluation due to hypoglycemic symptoms during prolonged fasting, which are resolved by eating foods since five years ago.

# Present Illness:

- A 66-year-old woman
- No health problems until 5 years ago.
- History of recurrent episodes of hypoglycemic during prolonged fasting, which are resolved by eating foods since five years ago.

# Present Illness:

- At first hypoglycemic symptoms happened 4-5 times in month.
- In the last three to four months, the number of hypoglycemic attacks has increased so that in some days the patient had this symptoms 2-3 times.

# Present Illness:

- Since the beginning of the disease, the patient has never checked her BS.
- With the increase in attacks, the patient suspected heart problems and went to the hospital for further investigation.

# Present Illness:

- After her heart problems were ruled out, she was referred to another doctor.
- The doctor requests blood tests, and she noticed the low BS.
- The patient was referred to Taleghani hospital for Examination.

# 1401.11.16

| test | Result |
|---|---|
| FBS | 58 mg/dl |
| 2hpp | 80 mg/dl |
| HbA1c | 6.1% |
| Na | 140 mEq/l |
| K | 3.9 mEq/l |
| Calcium | 9.4 mg/dl |
| Phosphor | 2.6 mg/dl |
| (25-OH)D3 | 52 ng/ml |
| TSH | 1.72 mIu/ml |
| T4 | 1.22 ng/ml |
| T3 | 1.38 ng/ml |

| test | Result |
|---|---|
| WBC | 13900/cumm |
| Hb | 12.2 g/dl |
| plt | 216000/cumm |
| BUN | 62 mg/dl |
| Creatinine | 1.5 mg/dl |
| ALT | 20 iu/l |
| AST | 31 iu/l |
| Triglycerides | 120 mg/dl |
| Cholestrol | 107 mg/dl |
| HDL | 45 mg/dl |
| LDL | 38 mg/dl |

# Present Illness:

- Fasting test was performed for patient during hospitalization.
- After the fasting test, the patient was discharged.

# Fasting test:

## 1401/12/03

| left hand | | |
|---|---|---|
| BS | 51 mg/dl | |
| Insulin | 28.4 miu/ml | 2-22 |
| C-peptide | 6.7 ng/ml | 0.9-7.1 |

| Right hand | | |
|---|---|---|
| BS | 52 mg/dl | |
| Insulin | 25.6 miu/ml | 2-22 |
| C-peptide | 6.6 ng/ml | 0.9-7.1 |

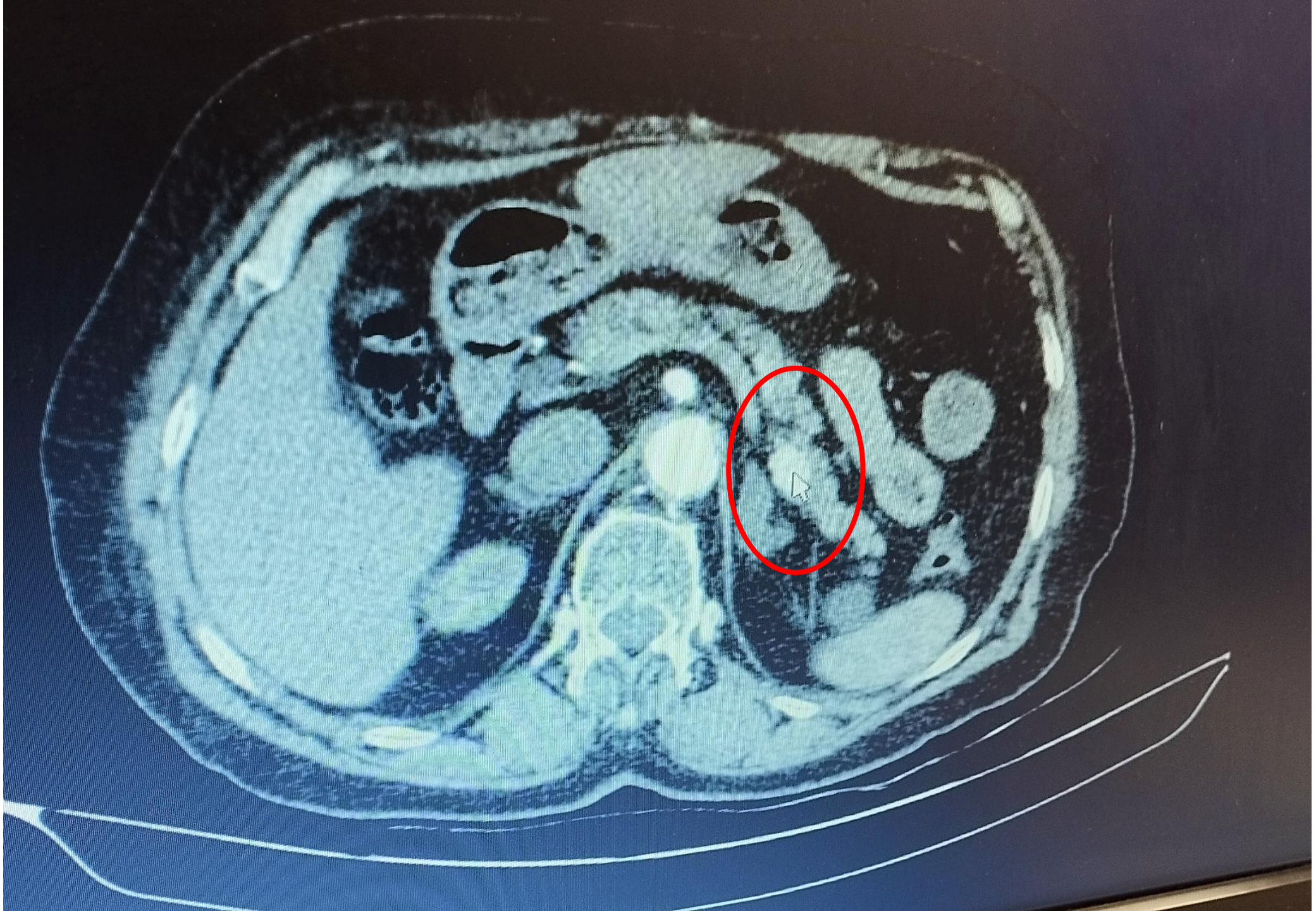
Sulfonyl urea (negative)

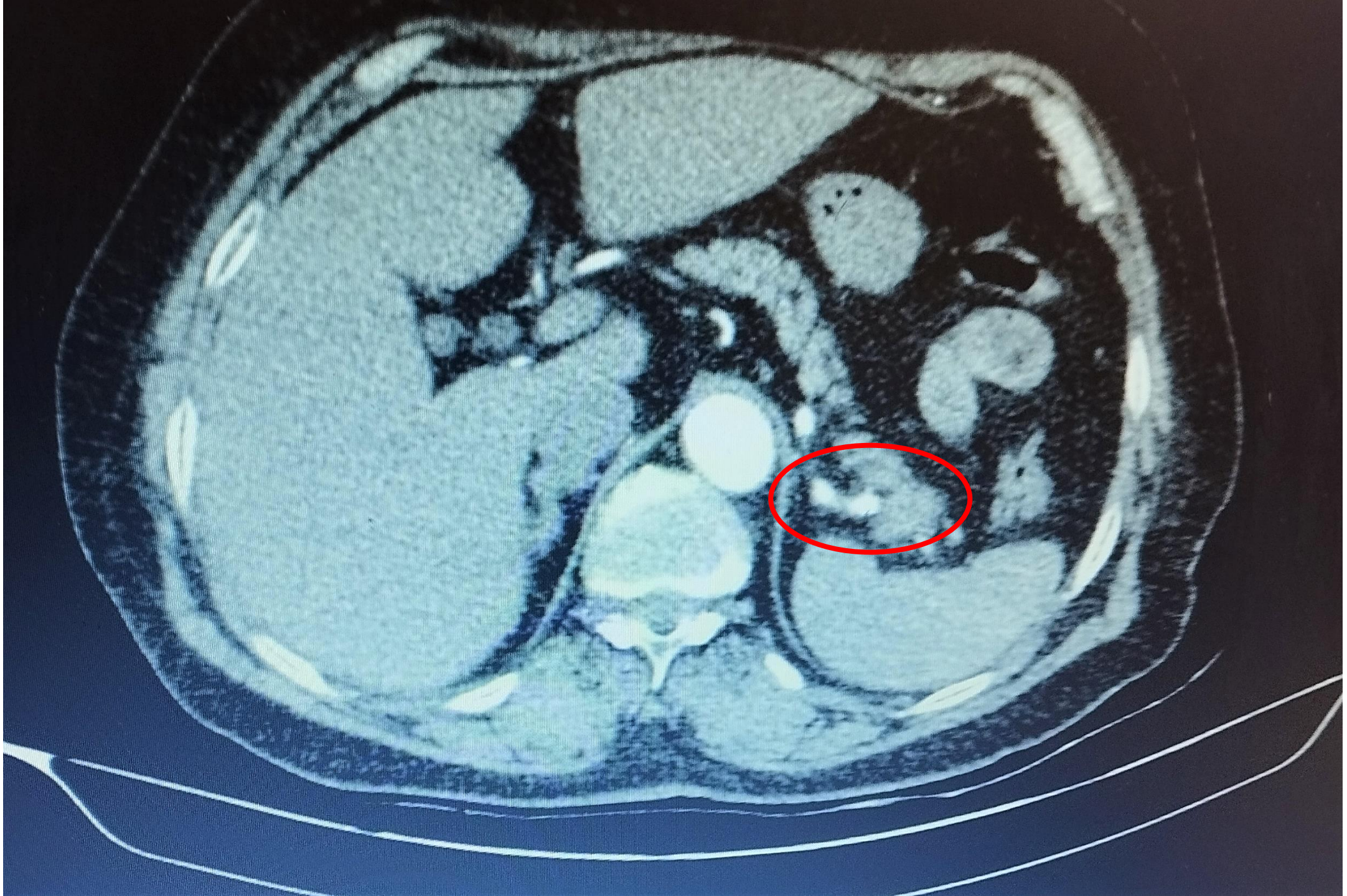
**TABLE 38.9** Patterns of Findings During Fasting or After a Mixed Meal in Normal Individuals[a] and in Individuals With Hyperinsulinemic (or IGF-Mediated) Hypoglycemia or Hypoglycemia Caused by Other Mechanisms

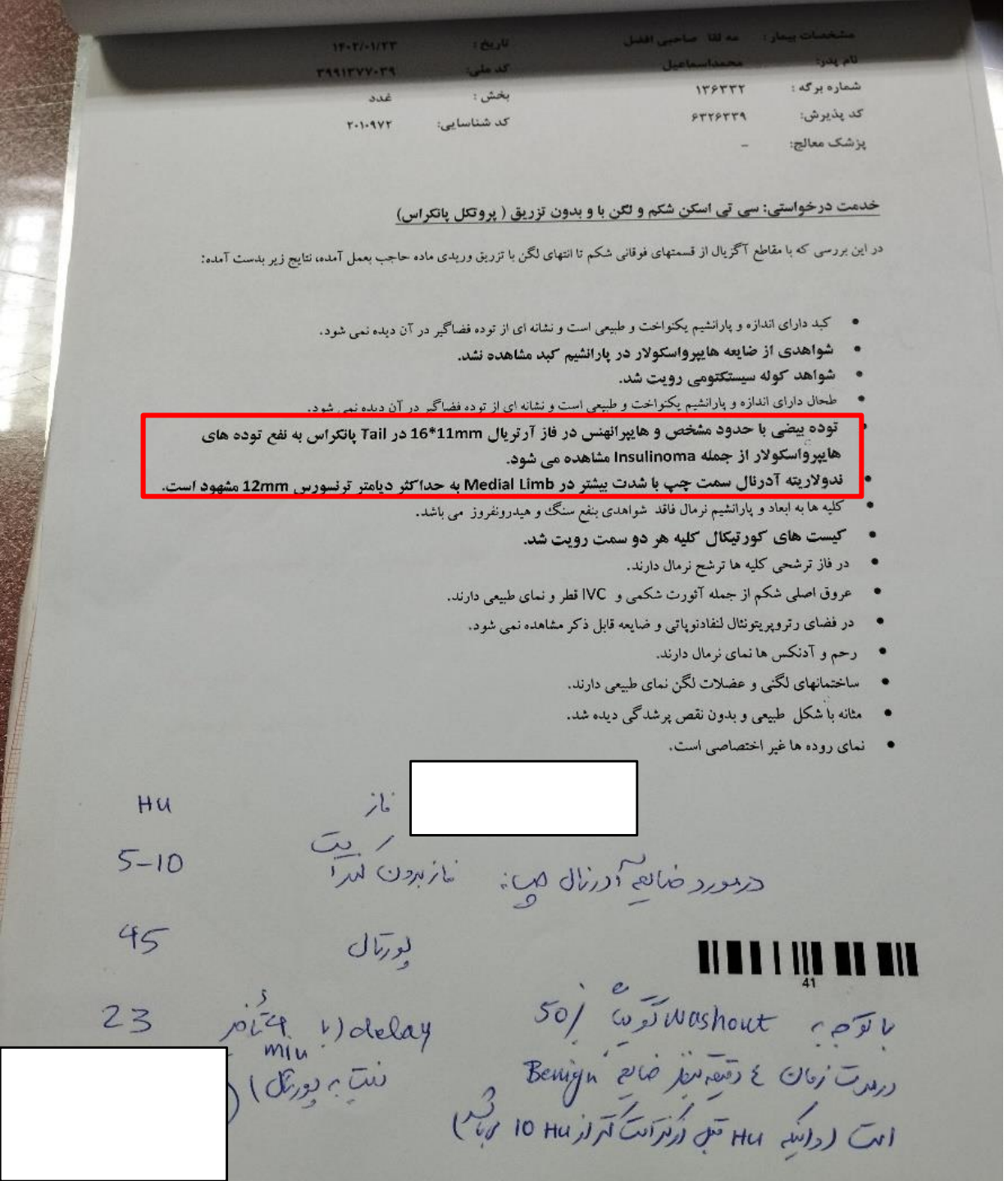
| Symptoms, Signs, or Both | Glucose (mg/dL) | Insulin (μU/mL) | C-Peptide (nmol/L) | Proinsulin (pmol/L) | β-Hydroxybutyrate (mmol/L) | Glucose Increase After Glucagon (mg/dL) | Circulating Oral Hypoglycemic Agent | Antibody to Insulin | Diagnostic Interpretation |
|---|---|---|---|---|---|---|---|---|---|
| No | <55 | <3 | <0.2 | <5 | >2.7 | <25 | No | No | Normal |
| Yes | <55 | ≫3 | <0.2 | <5 | ≤2.7 | >25 | No | Neg (Pos) | Exogenous insulin |
| Yes | <55 | ≥3 | ≥0.2 | ≥5 | ≤2.7 | >25 | No | Neg | Insulinoma, NIPHS, PGBH |

# Present Illness:

- On 1401/12/14  the patient was re-admitted to investigate hyper insulinism.
  - Abdominal CT scan
  - EUS







مشخصات بیمار : مه لقا صاحبی افضل
نام پدر: محمداسماعیل
شماره برگه : ۱۳۶۳۳۲
کد پذیرش: ۶۳۲۶۳۳۹
پزشک معالج: -
تاریخ : ۱۴۰۲/۰۱/۲۳
کد ملی: ۳۹۹۱۳۷۷۰۳۹
بخش : غدد
کد شناسایی: ۲۰۱۰۹۷۲

خدمت درخواستی: سی تی اسکن شکم و لگن با و بدون تزریق ( پروتکل پانکراس)

در این بررسی که با مقاطع آگزیال از قسمتهای فوقانی شکم تا انتهای لگن با تزریق وریدی ماده حاجب بعمل آمده، نتایج زیر بدست آمده:

- کبد دارای اندازه و پارانشیم یکنواخت و طبیعی است و نشانه ای از توده فضاگیر در آن دیده نمی شود.
- **شواهدی از ضایعه هایپرواسکولار در پارانشیم کبد مشاهده نشد.**
- **شواهد کوله سیستکتومی رویت شد.**
- طحال دارای اندازه و پارانشیم یکنواخت و طبیعی است و نشانه ای از توده فضاگیر در آن دیده نمی شود.
- **توده بیضی با حدود مشخص و هایپرانهنس در فاز آرتریال 16*11mm در Tail پانکراس به نفع توده های هایپرواسکولار از جمله Insulinoma مشاهده می شود.**
- **ندولاریته آدرنال سمت چپ با شدت بیشتر در Medial Limb به حداکثر دیامتر ترنسورس 12mm مشهود است.**
- کلیه ها به ابعاد و پارانشیم نرمال فاقد شواهدی بنفع سنگ و هیدرونفروز می باشد.
- **کیست های کورتیکال کلیه هر دو سمت رویت شد.**
- در فاز ترشحی کلیه ها ترشح نرمال دارند.
- عروق اصلی شکم از جمله آئورت شکمی و IVC قطر و نمای طبیعی دارند.
- در فضای رتروپریتونئال لنفادنوپاتی و ضایعه قابل ذکر مشاهده نمی شود.
- رحم و آدنکس ها نمای نرمال دارند.
- ساختمانهای لگنی و عضلات لگن نمای طبیعی دارند.
- مثانه با شکل طبیعی و بدون نقص پرشدگی دیده شد.
- نمای روده ها غیر اختصاصی است.

# CT scan

- An oval shape mass with regular border and hyper enhancement in the arterial phase of ***16*11 mm*** is observed in the tail of the pancreas in favor of hyper vascular masses including insulinoma.
- The nodularity of the left adrenal is more intense in the medial limb and the maximum diameter is ***12 mm***

# Adrenal tests:

## 1401/12/22

| Pheochromocytoma tests | | |
|---|---|---|
| Urine volume 24hr | 1500ml/24hr | |
| Urine creatinine | 1530mg/24hr | |
| VMA | 1.6 mg/24hr | |
| metanephrin | 111mcg/24hr | 44-265 |
| normetanephrin | 302 mcg/24hr | 65-560 |
| Protein | 45 mg/24hr | |

# Adrenal tests:

## 1401/12/27

| Cushing tests | | |
|---|---|---|
| ACTH | 11 | |
| Cortisol 8 Am | 15.2 | 4.5-24 |
| ODST | 2.3 | |

| hyperaldosteronism tests | | |
|---|---|---|
| K | 4.3 | |
| PRA | 0.51 ng/ml/hr | 0.5-4 |
| Aldosterone | 24.5 ng/dl | |

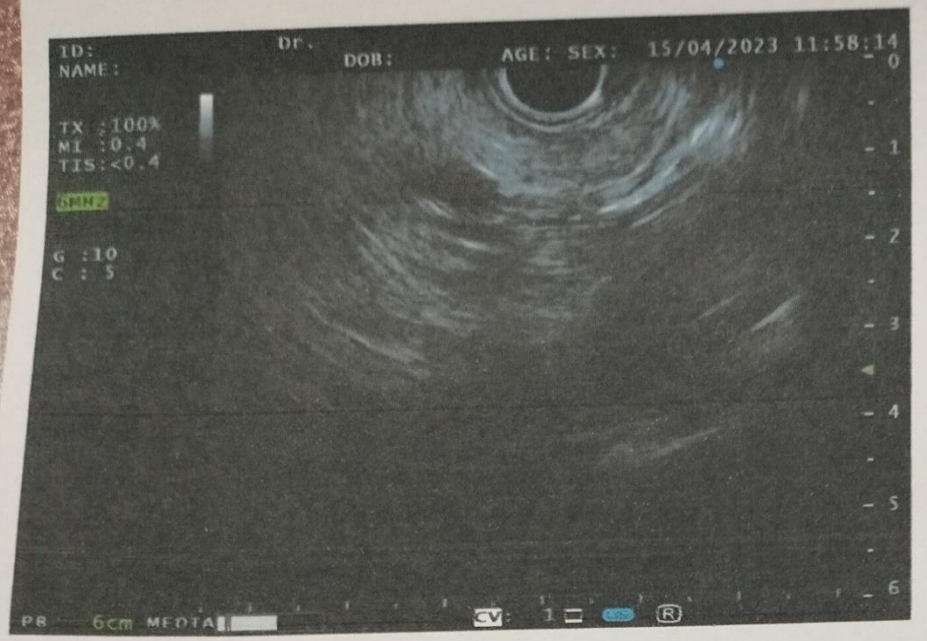
Aldosterone/PRA Ratio: 49

Saline loading test

Aldosterone: 25.5 ng/dl

# Present Illness:

- After performing the adrenal tests, the patient was discharged because the EUS could not be performed due to the use of Aspirin.
- On 1402/01/19 the patient was re-admitted for EUS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DOB:
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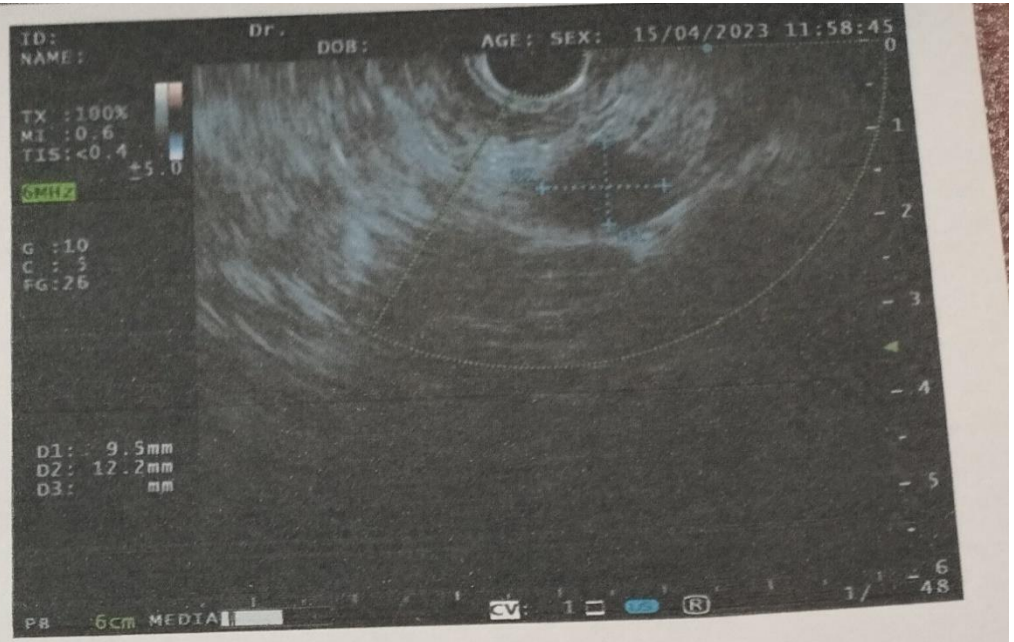
TIS:<0.4
6MHz
G :10
C : 5
PB 6cm MEDIA
CV: 1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±5.0
6MHz
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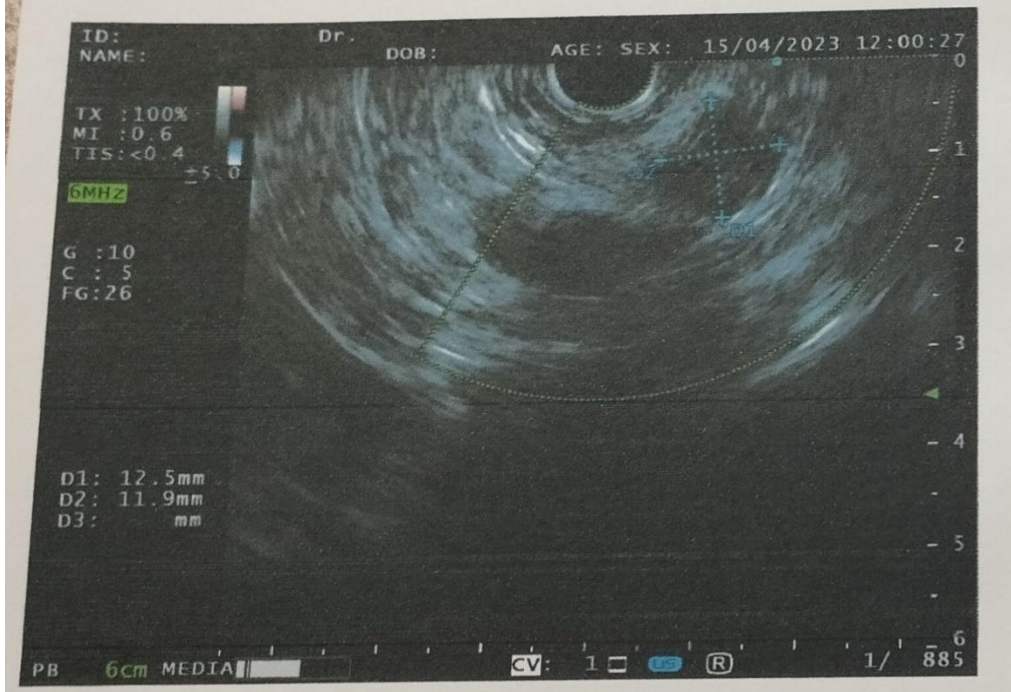
C : 5
FG:26
D1: 9.5mm
D2: 12.2mm
D3: mm
PB 6cm MEDIA
CV: 1
1/ 48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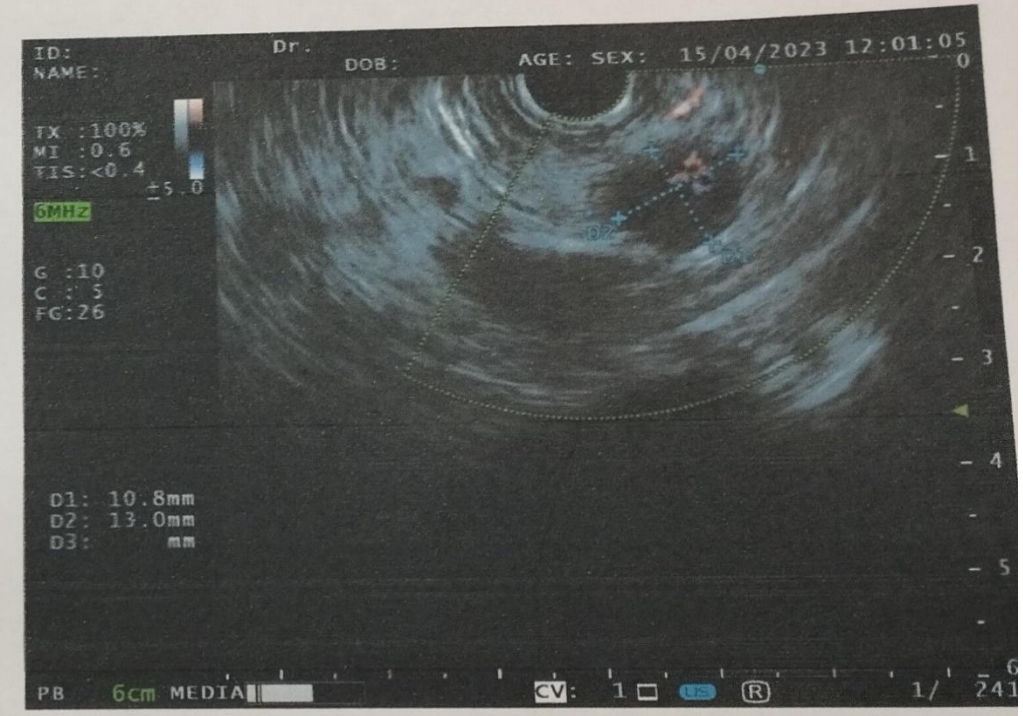
6MHz
G :10
C : 5
FG:26
D1: 12.5mm
D2: 11.9mm
D3: mm
PB 6cm MEDIA
CV: 1
1/ 885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Dr.
DOB:
AGE: SEX:
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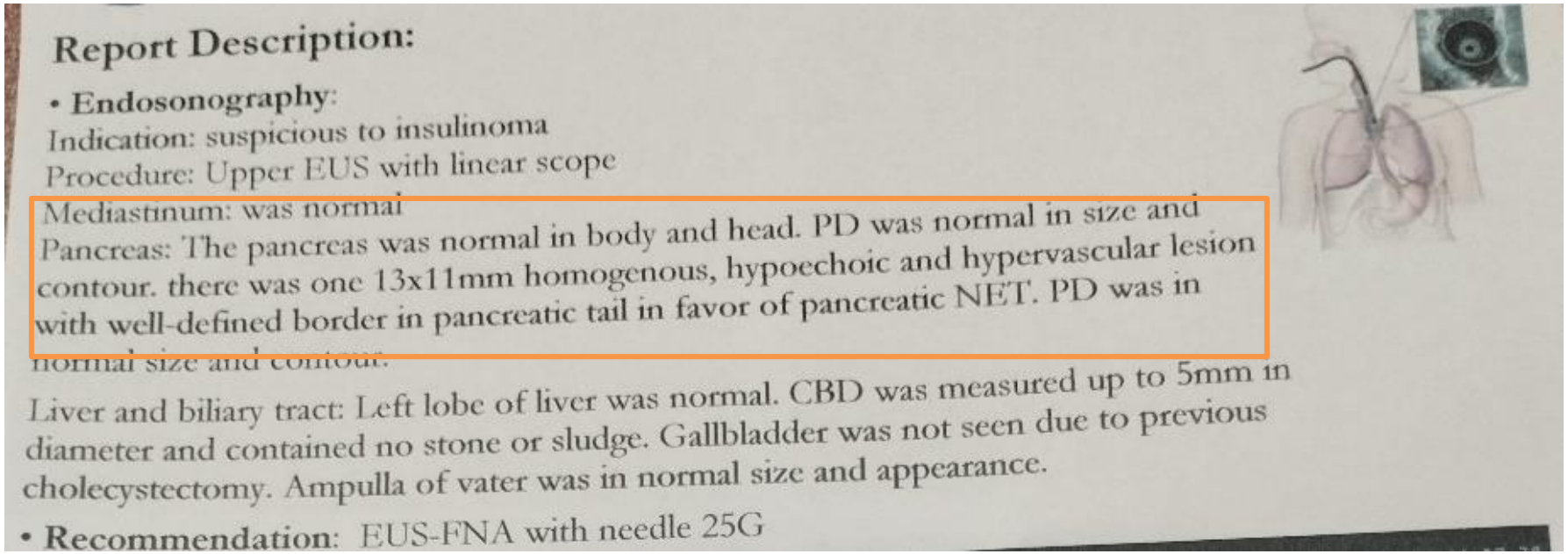
TIS:<0.4
±5.0
6MHz
G :10
C : 5
FG:26
D1: 10.8mm
D2: 13.0mm
D3: mm
PB 6cm MEDIA
CV: 1
1/ 241

# EUS:

# 1402/01/26



**Report Description:**

- **Endosonography:**

Indication: suspicious to insulinoma

Procedure: Upper EUS with linear scope

Mediastinum: was normal

Pancreas: The pancreas was normal in body and head. PD was normal in size and contour. there was one 13x11mm homogenous, hypoechoic and hypervascular lesion with well-defined border in pancreatic tail in favor of pancreatic NET. PD was in normal size and contour.

Liver and biliary tract: Left lobe of liver was normal. CBD was measured up to 5mm in diameter and contained no stone or sludge. Gallbladder was not seen due to previous cholecystectomy. Ampulla of vater was in normal size and appearance.

- **Recommendation:** EUS-FNA with needle 25G

There was one 13*11 mm homogenous, hypoechoic and hyper vascular lesion with well-defined border in pancreatic tail in favor of pancreatic NET.

# Present Illness:

- At the time of hospitalization, her doctor notice the ***high calcium level***, In addition, a ***thyroid nodule*** was also observed during the examination and the patient was tested for these problems.

| test | Result |
|---|---|
| Na | 140 mEq/l |
| K | 3.8 mEq/l |
| Calcium | 11.5 mg/dl |
| Phosphor | 2.9 mg/dl |
| Albumine | 4.2 mg/ml |

| test | Result |
|---|---|
| WBC | 7900/cumm |
| Hb | 11.8 g/dl |
| plt | 237000/cumm |
| BUN | 62 mg/dl |
| Creatinine | 1.31 mg/dl |
| ALT | 29 iu/l |
| AST | 28 iu/l |
| Triglycerides | 160 mg/dl |
| Cholestrol | 147 mg/dl |
| HDL | 41 mg/dl |
| LDL | 89 mg/dl |

# 1402/01/19

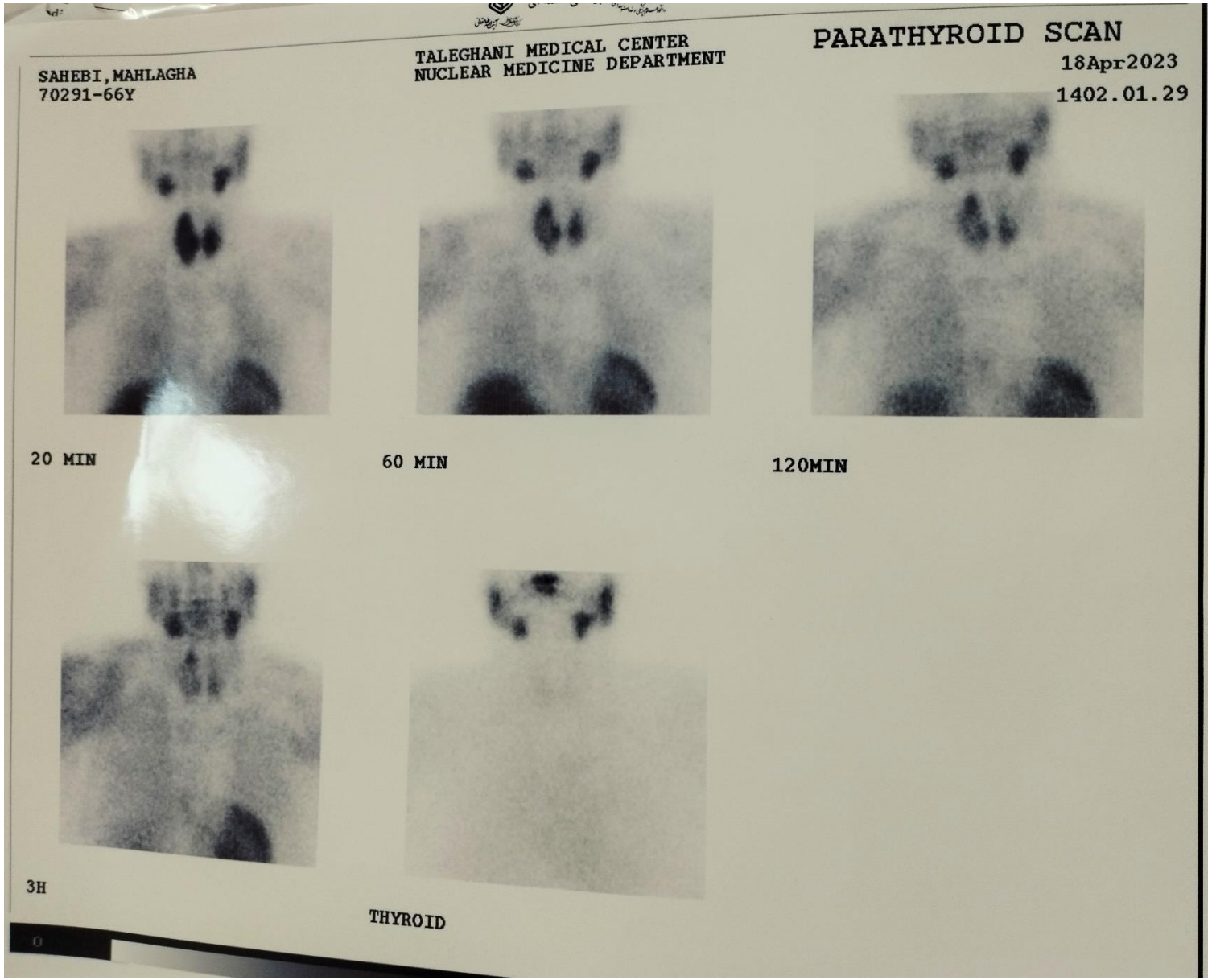
| parathyroid test | | |
|---|---|---|
| Calcium | 11/1 mg/dl | 8.6-10.3mg/dl |
| Phosphorus | 2.5 mg/dl | 2.8- 4.5mg/dl |
| Albumin | 4.8 g/dl | 3.4- 5.4g/dl |
| PTH | 122 Pg/ml | 10-55Pg/ml |

# 1402/01/19

| test | | |
|---|---|---|
| Urine volume 24h | 1250 ml/24hr | |
| Urine Cr 24h | 1125 mg/dl | 600-1800 |
| Urine protein 24h | 145 g/dl | 20-150 |
| Urine Ca 24h | 110 mg/24hr | Up to 250 |

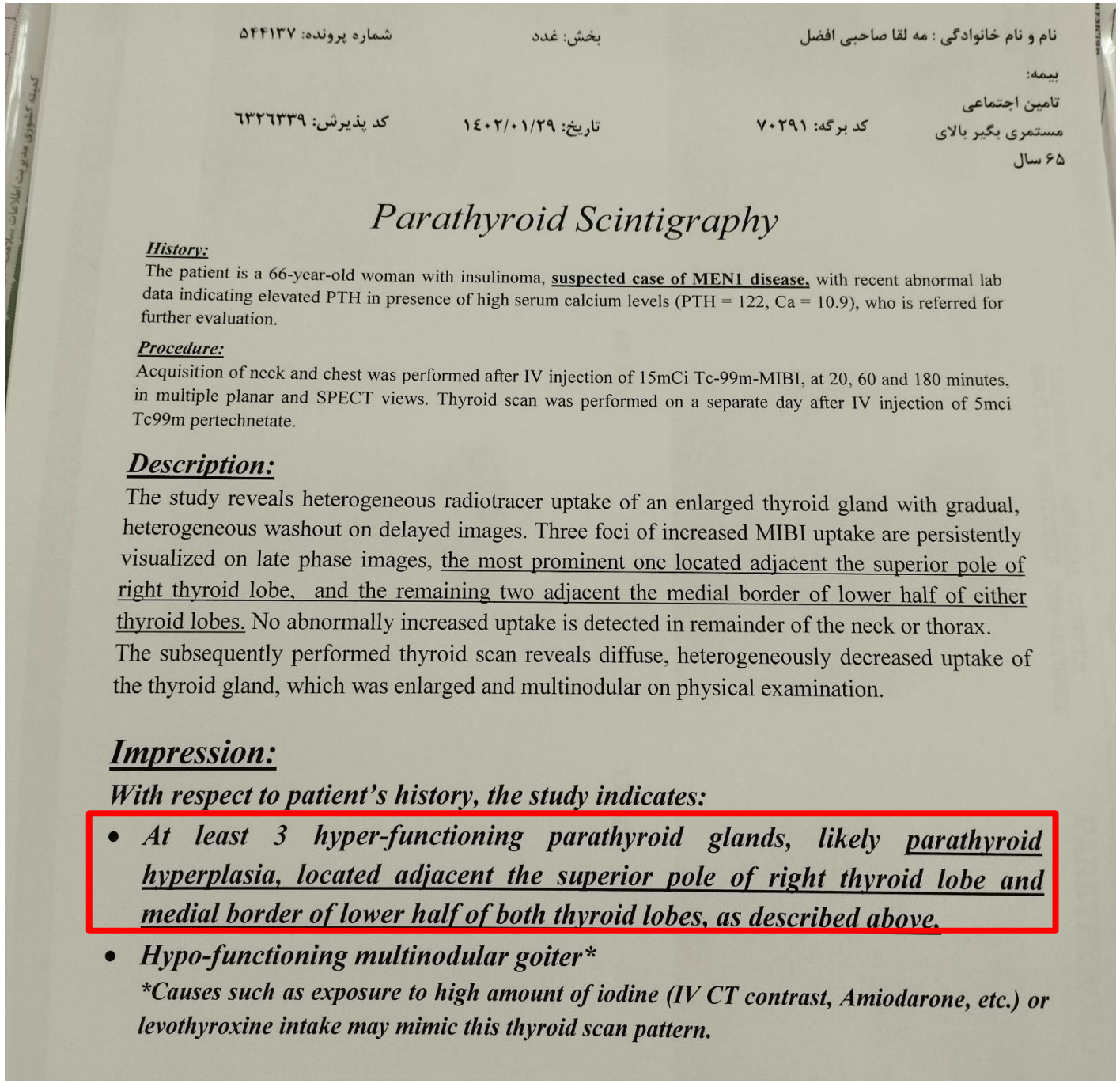
# 1402/01/28

| tests | Result |
| --- | --- |
| prolactin | 276 mIU/L |
| IGF-1 | 104 ng/ml |




# Parathyroid scintigraphy

1402/01/29



نام و نام خانوادگی : مه لقا صاحبی افضل
بخش: غدد
شماره پرونده: ۵۴۴۱۳۷
بیمه: تامین اجتماعی
کد برگه: ۷۰۲۹۱
تاریخ: ۱۴۰۲/۰۱/۲۹
کد پذیرش: ۶۳۲۶۳۳۹
مستمری بگیر بالای ۶۵ سال

## Parathyroid Scintigraphy

***History:***
The patient is a 66-year-old woman with insulinoma, **suspected case of MEN1 disease,** with recent abnormal lab data indicating elevated PTH in presence of high serum calcium levels (PTH = 122, Ca = 10.9), who is referred for further evaluation.

***Procedure:***
Acquisition of neck and chest was performed after IV injection of 15mCi Tc-99m-MIBI, at 20, 60 and 180 minutes, in multiple planar and SPECT views. Thyroid scan was performed on a separate day after IV injection of 5mci Tc99m pertechnetate.

***Description:***
The study reveals heterogeneous radiotracer uptake of an enlarged thyroid gland with gradual, heterogeneous washout on delayed images. Three foci of increased MIBI uptake are persistently visualized on late phase images, the most prominent one located adjacent the superior pole of right thyroid lobe, and the remaining two adjacent the medial border of lower half of either thyroid lobes. No abnormally increased uptake is detected in remainder of the neck or thorax.
The subsequently performed thyroid scan reveals diffuse, heterogeneously decreased uptake of the thyroid gland, which was enlarged and multinodular on physical examination.

***Impression:***
***With respect to patient's history, the study indicates:***

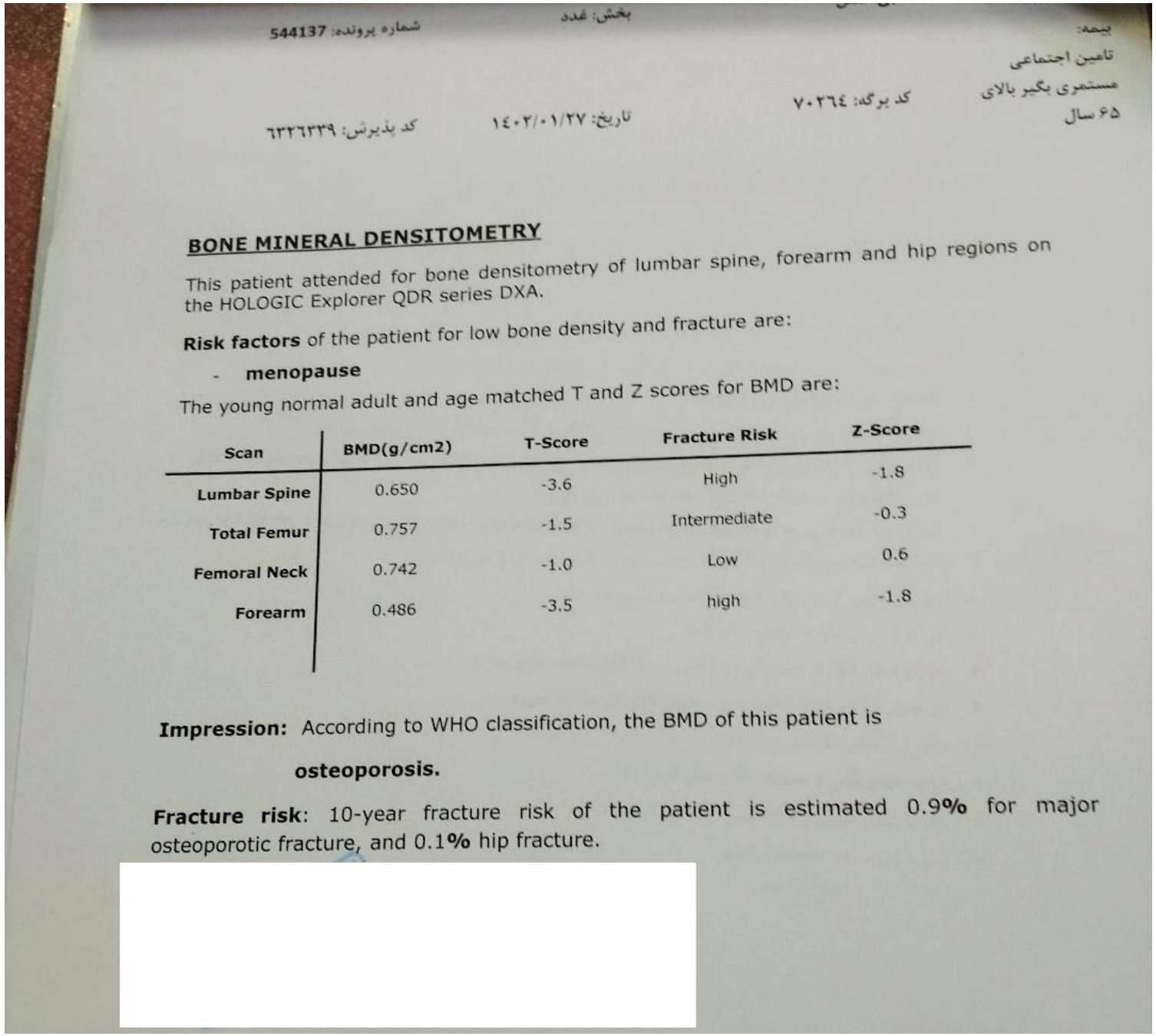
- ***At least 3 hyper-functioning parathyroid glands, likely parathyroid hyperplasia, located adjacent the superior pole of right thyroid lobe and medial border of lower half of both thyroid lobes, as described above.***
- ***Hypo-functioning multinodular goiter****

***Causes such as exposure to high amount of iodine (IV CT contrast, Amiodarone, etc.) or levothyroxine intake may mimic this thyroid scan pattern.***

# 1402/01/29

# Parathyroid scintigraphy

At least 3 hyper-function glands, likely parathyroid hyperplasia, located adjacent the superior pole of right thyroid lobe and medial border of lower half of the thyroid lobes.



شماره پرونده: 544137

بخش: غدد

بیمه: تامین اجتماعی

مستمری بگیر بالای ۶۵ سال

کد برگه: ۷۰۲۶٤

تاریخ: ۱٤۰۲/۰۱/۲۷

کد پذیرش: ٦۳۲٦۳۳۹

**BONE MINERAL DENSITOMETRY**

This patient attended for bone densitometry of lumbar spine, forearm and hip regions on the HOLOGIC Explorer QDR series DXA.

**Risk factors** of the patient for low bone density and fracture are:

- **menopause**

The young normal adult and age matched T and Z scores for BMD are:

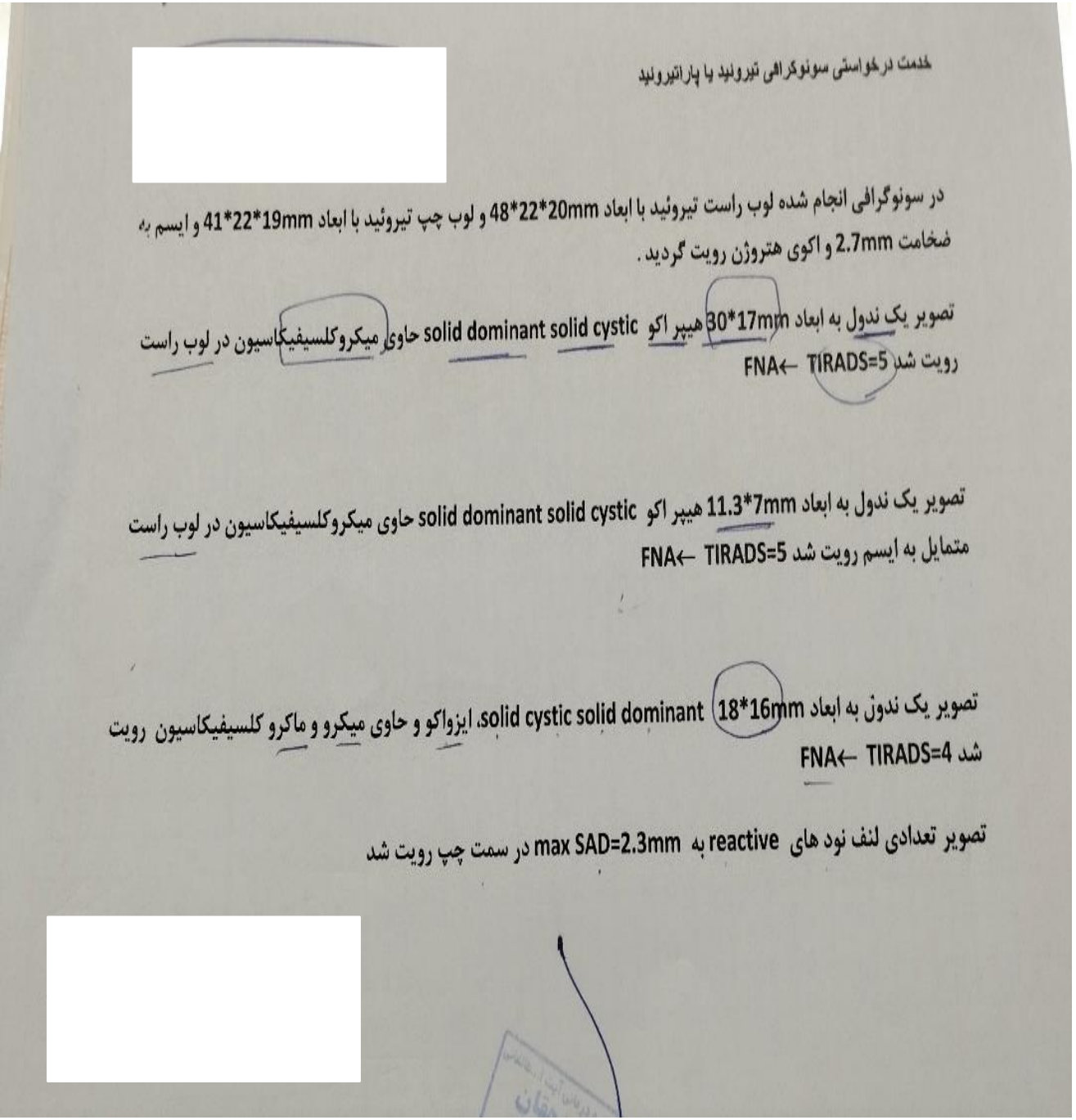
| Scan | BMD(g/cm2) | T-Score | Fracture Risk | Z-Score |
|---|---|---|---|---|
| **Lumbar Spine** | 0.650 | -3.6 | High | -1.8 |
| **Total Femur** | 0.757 | -1.5 | Intermediate | -0.3 |
| **Femoral Neck** | 0.742 | -1.0 | Low | 0.6 |
| **Forearm** | 0.486 | -3.5 | high | -1.8 |

**Impression:** According to WHO classification, the BMD of this patient is

**osteoporosis.**

**Fracture risk**: 10-year fracture risk of the patient is estimated 0.9**%** for major osteoporotic fracture, and 0.1**%** hip fracture.

# BMD 1402/01/27


خدمت درخواستی سونوگرافی تیروئید با پاراتیروئید

در سونوگرافی انجام شده لوب راست تیروئید با ابعاد 48*22*20mm و لوب چپ تیروئید با ابعاد 41*22*19mm و ایسم به ضخامت 2.7mm و اکوی هتروژن رویت گردید.

تصویر یک ندول به ابعاد 30*17mm هیپر اکو solid dominant solid cystic حاوی میکروکلسیفیکاسیون در لوب راست رویت شد TIRADS=5← FNA

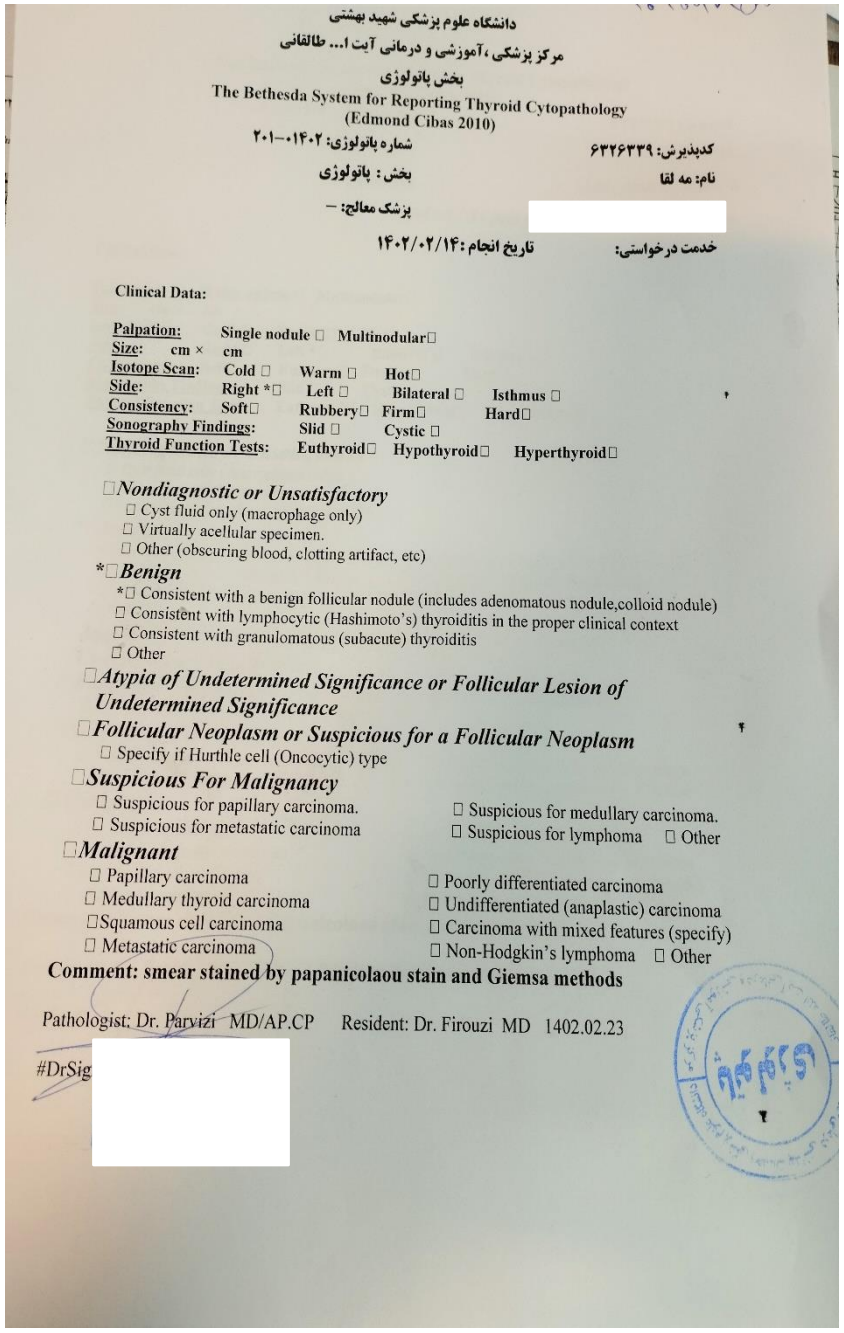
تصویر یک ندول به ابعاد 11.3*7mm هیپر اکو solid dominant solid cystic حاوی میکروکلسیفیکاسیون در لوب راست متمایل به ایسم رویت شد TIRADS=5← FNA

تصویر یک ندول به ابعاد 18*16mm solid cystic solid dominant، ایزواکو و حاوی میکرو و ماکرو کلسیفیکاسیون رویت شد TIRADS=4← FNA

تصویر تعدادی لنف نود های reactive به max SAD=2.3mm در سمت چپ رویت شد

# Sonography 1402/01/22

- R.L:
  - Nodule:
  - 30*17 mm solid cystic solid dominant/microcacification
  - 11.3*7 mm solid cystic solid dominant/microcacification
- L.L:
  - Nodule:
  - 18*16 mm solid cystic solid dominant/microcacification



دانشگاه علوم پزشکی شهید بهشتی
مرکز پزشکی، آموزشی و درمانی آیت ا... طالقانی
بخش پاتولوژی

The Bethesda System for Reporting Thyroid Cytopathology
(Edmond Cibas 2010)

کدپذیرش: ۶۳۲۶۳۳۹ شماره پاتولوژی: ۰۱۴۰۲-۲۰۱
نام: مه لقا بخش : پاتولوژی
پزشک معالج: – خدمت درخواستی: تاریخ انجام: ۱۴۰۲/۰۲/۱۴

Clinical Data:

Palpation: Single nodule ☐ Multinodular☐
Size: cm × cm
Isotope Scan: Cold ☐ Warm ☐ Hot☐
Side: Right *☐ Left ☐ Bilateral ☐ Isthmus ☐
Consistency: Soft☐ Rubbery☐ Firm☐ Hard☐
Sonography Findings: Slid ☐ Cystic ☐
Thyroid Function Tests: Euthyroid☐ Hypothyroid☐ Hyperthyroid☐

☐*Nondiagnostic or Unsatisfactory*
☐ Cyst fluid only (macrophage only)
☐ Virtually acellular specimen.
☐ Other (obscuring blood, clotting artifact, etc)

*☐*Benign*
*☐ Consistent with a benign follicular nodule (includes adenomatous nodule,colloid nodule)
☐ Consistent with lymphocytic (Hashimoto's) thyroiditis in the proper clinical context
☐ Consistent with granulomatous (subacute) thyroiditis
☐ Other

☐*Atypia of Undetermined Significance or Follicular Lesion of Undetermined Significance*

☐*Follicular Neoplasm or Suspicious for a Follicular Neoplasm*
☐ Specify if Hurthle cell (Oncocytic) type

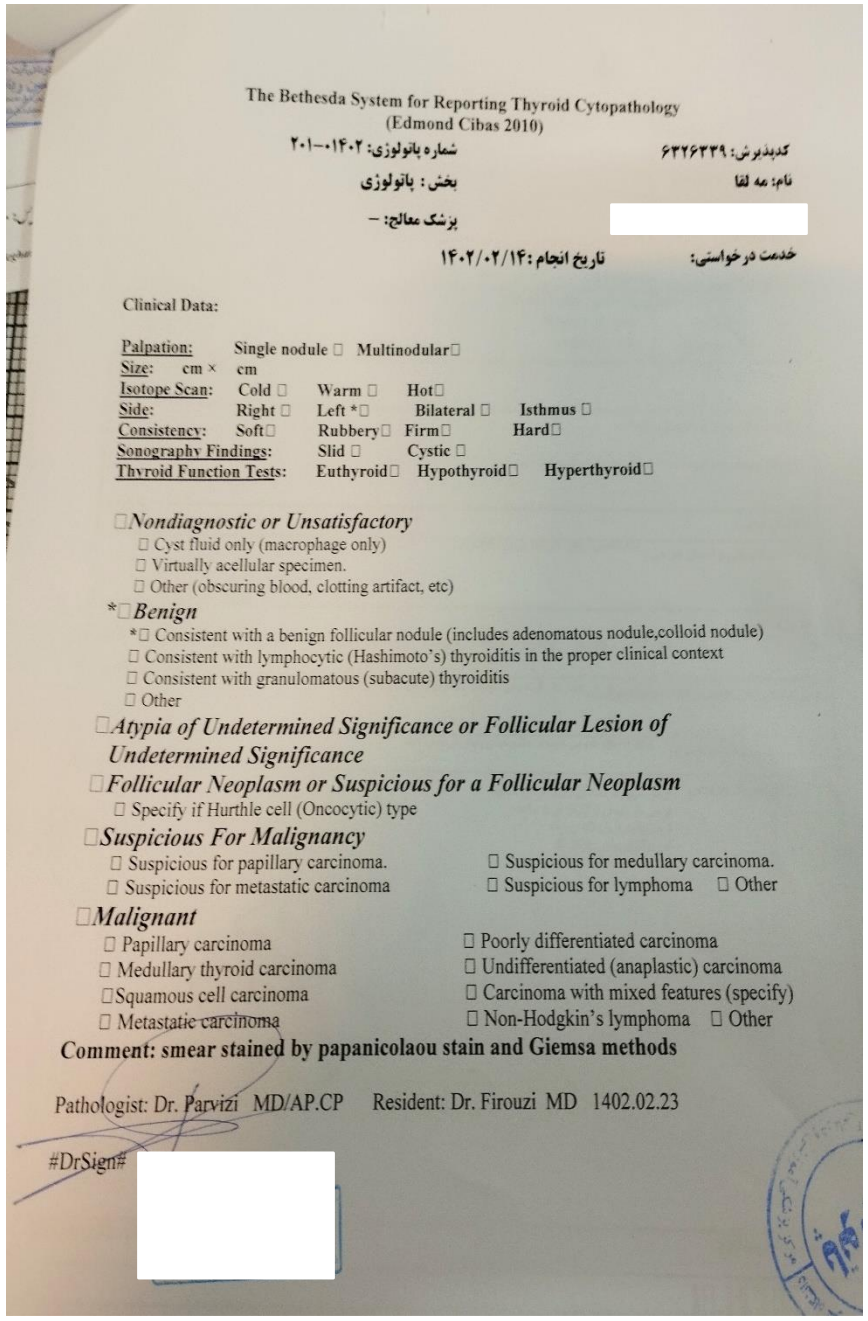
☐*Suspicious For Malignancy*
☐ Suspicious for papillary carcinoma. ☐ Suspicious for medullary carcinoma.
☐ Suspicious for metastatic carcinoma ☐ Suspicious for lymphoma ☐ Other

☐*Malignant*
☐ Papillary carcinoma ☐ Poorly differentiated carcinoma
☐ Medullary thyroid carcinoma ☐ Undifferentiated (anaplastic) carcinoma
☐Squamous cell carcinoma ☐ Carcinoma with mixed features (specify)
☐ Metastatic carcinoma ☐ Non-Hodgkin's lymphoma ☐ Other

**Comment: smear stained by papanicolaou stain and Giemsa methods**

Pathologist: Dr. Parvizi MD/AP.CP Resident: Dr. Firouzi MD 1402.02.23

#DrSig



The Bethesda System for Reporting Thyroid Cytopathology
(Edmond Cibas 2010)

کدپذیرش: ۶۳۲۶۳۳۹ شماره پاتولوژی: ۰۱۴۰۲-۲۰۱
نام: مه لقا بخش : پاتولوژی
پزشک معالج: – خدمت درخواستی: تاریخ انجام: ۱۴۰۲/۰۲/۱۴

Clinical Data:

Palpation: Single nodule ☐ Multinodular☐
Size: cm × cm
Isotope Scan: Cold ☐ Warm ☐ Hot☐
Side: Right ☐ Left *☐ Bilateral ☐ Isthmus ☐
Consistency: Soft☐ Rubbery☐ Firm☐ Hard☐
Sonography Findings: Slid ☐ Cystic ☐
Thyroid Function Tests: Euthyroid☐ Hypothyroid☐ Hyperthyroid☐

☐*Nondiagnostic or Unsatisfactory*
☐ Cyst fluid only (macrophage only)
☐ Virtually acellular specimen.
☐ Other (obscuring blood, clotting artifact, etc)

*☐*Benign*
*☐ Consistent with a benign follicular nodule (includes adenomatous nodule,colloid nodule)
☐ Consistent with lymphocytic (Hashimoto's) thyroiditis in the proper clinical context
☐ Consistent with granulomatous (subacute) thyroiditis
☐ Other

☐*Atypia of Undetermined Significance or Follicular Lesion of Undetermined Significance*

☐*Follicular Neoplasm or Suspicious for a Follicular Neoplasm*
☐ Specify if Hurthle cell (Oncocytic) type

☐*Suspicious For Malignancy*
☐ Suspicious for papillary carcinoma. ☐ Suspicious for medullary carcinoma.
☐ Suspicious for metastatic carcinoma ☐ Suspicious for lymphoma ☐ Other

☐*Malignant*
☐ Papillary carcinoma ☐ Poorly differentiated carcinoma
☐ Medullary thyroid carcinoma ☐ Undifferentiated (anaplastic) carcinoma
☐Squamous cell carcinoma ☐ Carcinoma with mixed features (specify)
☐ Metastatic carcinoma ☐ Non-Hodgkin's lymphoma ☐ Other

**Comment: smear stained by papanicolaou stain and Giemsa methods**

Pathologist: Dr. Parvizi MD/AP.CP Resident: Dr. Firouzi MD 1402.02.23

#DrSign#

# FNA 1402/02/14

- Benign

- Past medical:
  - History of PCI 2 years ago.
  - HTN (10 years ago)
  - Cholecystectomy (1 year ago)
- Drug history:
  - Aspirin 80 mg Daily
  - Losartan 25 mg BD
  - Metoprolol 50 BD
  - Rosuvastatin 20 mg Daily

- Family History :
  - The patient’s father died in an accident at the age of 28.
  - The patient’s mother was healthy until the age of 90.
  - The patient has one healthy brother and she had a sister who died from intestinal cancer 6 years ago.
  - The patient has four children with an age range of 36 to 50 years old.

- Habitual History:
  - Neg
- Social History :
  - Married
  - 4 children
  - Education: uneducated

# Review of Systems:

- **Headache (+)** Nausea & Vomiting (-) Visual problems (-)
- Weight changes (-) Appetite changes (-) Sexual problems (-)
- Skin:Pigmentation (-) Diaphoresis (-) Dry & Fragile Hair (-)
- Ears, nose, mouth: Nl
- Cardiovascular: Nl, **Palpitation (+)**
- Respiratory:  Nl
- Gastrointestinal: Nl, Epigastric pain (-)
- Musculoskeletal: Nl
- Neurological: Nl
- Psychiatric:Nl

# Physical Examination:

- General Appearance:
  - A 66-year-old woman , awake and alert
- Vital Sign:
  - BP: 140/90 mmHg
  - HR: 98 / min
- BMI:
  - Wight: 78Kg  Hight:1.58m  BMI:30

# Physical Examination:

- Neck: thyroid mass was palpated in R.L
- Thorax: Nl
- Lungs : Clear
- Heart : Normal
- Abdomen : Normal
- Skin: No pigmentation
- Extremities :
    - Upper : Normal
    - Lower : Normal

# Problem list:

- **Insulinoma**
  - Hypoglycemia
  - Pancreatic NET

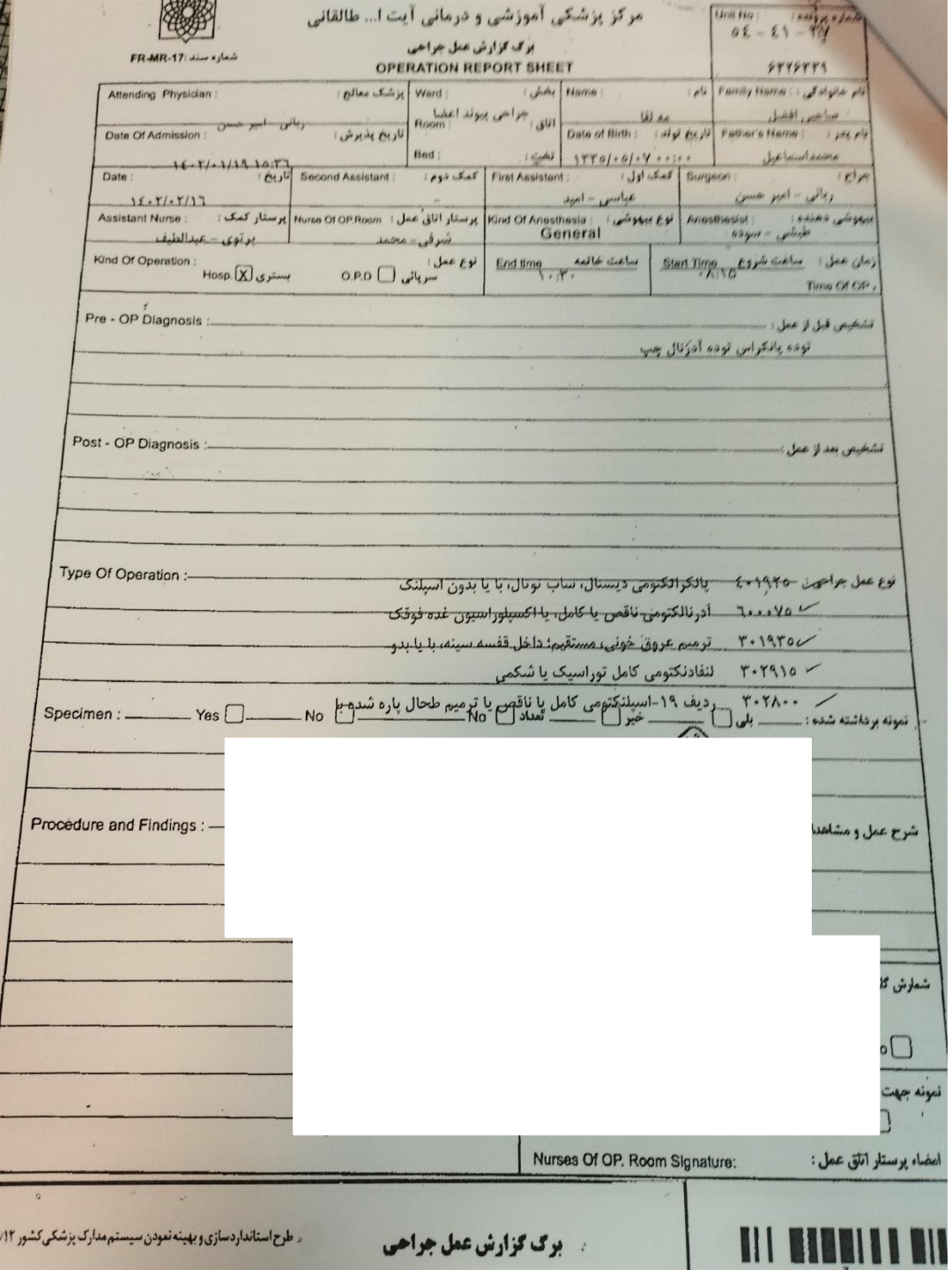
- **Benign thyroid nodules**

- **Small size left adrenal mass**
  - Hypertension
  - laboratory evidence of hyperaldosteronism
  - ODST (No suppression)

- **Hyperparathyroidism:**
  - PTH-dependent Hypercalcemia
  - osteoporosis

# Present Illness:

- After completing the examinations, the patient was scheduled for pancreatic surgery.
- Since the patient also had a mass in the left adrenal gland, it was decided to perform adrenalectomy at the time of pancreatic surgery.
- The patient was operated on 1402/02/14


مرکز پزشکی آموزشی و درمانی آیت ا... طالقانی

برگ گزارش عمل جراحی

OPERATION REPORT SHEET

FR-MR-17

Attending Physician : پزشک معالج : ربانی - امیر حسن

Ward : بخش : جراحی پیوند اعضا

Name : نام : مه لقا

Family Name : نام خانوادگی : صاحبی افضل

Date Of Admission : تاریخ پذیرش : ۱۴۰۲/۰۱/۱۹ ۱۵:۳۶

Room : اتاق :

Bed : تخت :

Date of Birth : تاریخ تولد : ۱۳۳۵/۰۵/۰۷ ۰۰:۰۰

Father's Name : نام پدر : محمداسماعیل

Date : تاریخ : ۱۴۰۲/۰۲/۱۶

Second Assistant : کمک دوم : -

First Assistant : کمک اول : عباسی - امید

Surgeon : جراح : ربانی - امیر حسن

Assistant Nurse : پرستار کمک : پرتوی - عبدالطیف

Nurse Of OP.Room : پرستار اتاق عمل : شرفی - محمد

Kind Of Anesthesia : نوع بیهوشی : General

Anesthesiist : بیهوشی دهنده : طریقی - سوده

Kind Of Operation : نوع عمل : Hosp. [X] بستری O.P.D [ ] سرپایی

End time ساعت خاتمه ۱۰:۳۰

Start Time ساعت شروع ۰۸:۱۵

Time Of OP. زمان عمل :

Pre - OP Diagnosis : تشخیص قبل از عمل : توده پانکراس توده آدرنال چپ

Post - OP Diagnosis : تشخیص بعد از عمل :

Type Of Operation : نوع عمل جراحی

۴۰۱۹۲۵ پانکراتکتومی دیستال، نساب تونال، با یا بدون اسپلنک

۶۰۰۰۷۵ آدرنالکتومی ناقص یا کامل، یا اکسپلوراسیون غده فوقی

۳۰۱۹۳۵ ترمیم عروق خونی، مستقیم، داخل قفسه سینه، با یا بدو

۳۰۲۹۱۵ لنفادنکتومی کامل توراسیک یا شکمی

۳۰۲۸۰۰ ردیف ۱۹-اسپلنکتومی کامل یا ناقص یا ترمیم طحال پاره شده با

Specimen : Yes [ ] No [ ] نمونه برداشته شده : بلی [ ] خیر [ ] تعداد

Procedure and Findings : شرح عمل و مشاهدا

Nurses Of OP. Room Signature: امضاء پرستار اتاق عمل :

طرح استانداردسازی و بهینه نمودن سیستم مدارک پزشکی کشور ۱۲/

برگ گزارش عمل جراحی

# 1402/02/14

- Distal pancreatectomy
- Splenectomy
- Left adrenalectomy

دانشگاه علوم پزشکی و خدمات درمانی شهید بهشتی
مرکز پزشکی ، آموزشی و درمانی آیت ا... طالقانی
پاتولوژی

برگه جوابدهی

| | | | |
|---|---|---|---|
| شماره پاتولوژی: | 1402-1113 | نام و نام خانوادگی: | |
| کدپذیرش: | ۶۳۲۶۳۳۹ | نام پدر: | |
| شماره پرونده: | ۵۴۴۱۳۷ | سن: | ۶۶ |
| کد شناسایی: | ۲۰۱۰۹۷۲ | بخش: | جراحی پیوند اعضا |
| تاریخ نسخه: | ۱۴۰۲/۰۲/۱۶ | آدرس: | |
| تاریخ جواب: | ۰۲/۰۲/۲۴ ۰۰:۰۰ | شماره برگه: | ۳۴۳ -- ۱۴۷۹۲۱ |
| | | جنس: | مونث |
| | | پزشک: | - |
| | | تلفن: | ۷۷۵۶۹۴۴۱ |
| | | نوع بیمه: | تامین اجتماعی مستمری بگیر با |

**Specimen :** A) Pancreas, distal pancreatectomy.
B) Spleen, splenectomy.
C) Adrenal, adrenalectomy.
CD: History of MEN syndrome.

**Macroscopic :**

Received specimens in three formalin containers labeled as above and consist of:
A) A portion of pancreas weighing 65gr and measuring 9x6x2.5cm. On serial sections, there is a creamy firm nodular mass measuring 1.3x0.9x0.8cm. RSS in 6 blocks as follows:
1-4) Mass
5, 6) Random
B) A spleen weighing 100gr and measuring 11x7.5x3cm. The capsule is intact. On serial sections, there is no grossly visible pathologic change. RSS in 5 blocks as follows:
1, 2) Hilum of spleen
3-5) Random
C) An adrenalectomy specimen covered by fatty tissue measuring 8x6x2.5cm, including adrenal gland measuring 7x3x1cm and weighing 20gr. On serial sections, no grossly visible pathologic change is seen. RSS in 4 blocks.

**Microscopic :**

Histologic findings, confirm the following diagnosis.

**Diagnosis :**

A) Pancreas, distal pancreatectomy:
- Well differentiated neuroendocrine tumor (G1).
- Tumor site: Distal pancreas.
- Tumor size: 1.3x0.9x0.8cm.
- Tumor extension: Tumor is confined to pancreas.
- Margins: All margins are free of tumor.
- Mitotic index < 2/20 HPF.
- Necrosis: Absent.
- Lymphovascular and perineural invasion are not identified.
- Pathologic stage: pT1c $N_X$ $M_X$

B) Spleen, splenectomy:
- Unremarkable spleen

C) Adrenal, adrenalectomy:
- Adrenal tissue with micronodular cortical hyperplasia.

ICD-O code: C: 25.9 M: 8240/3

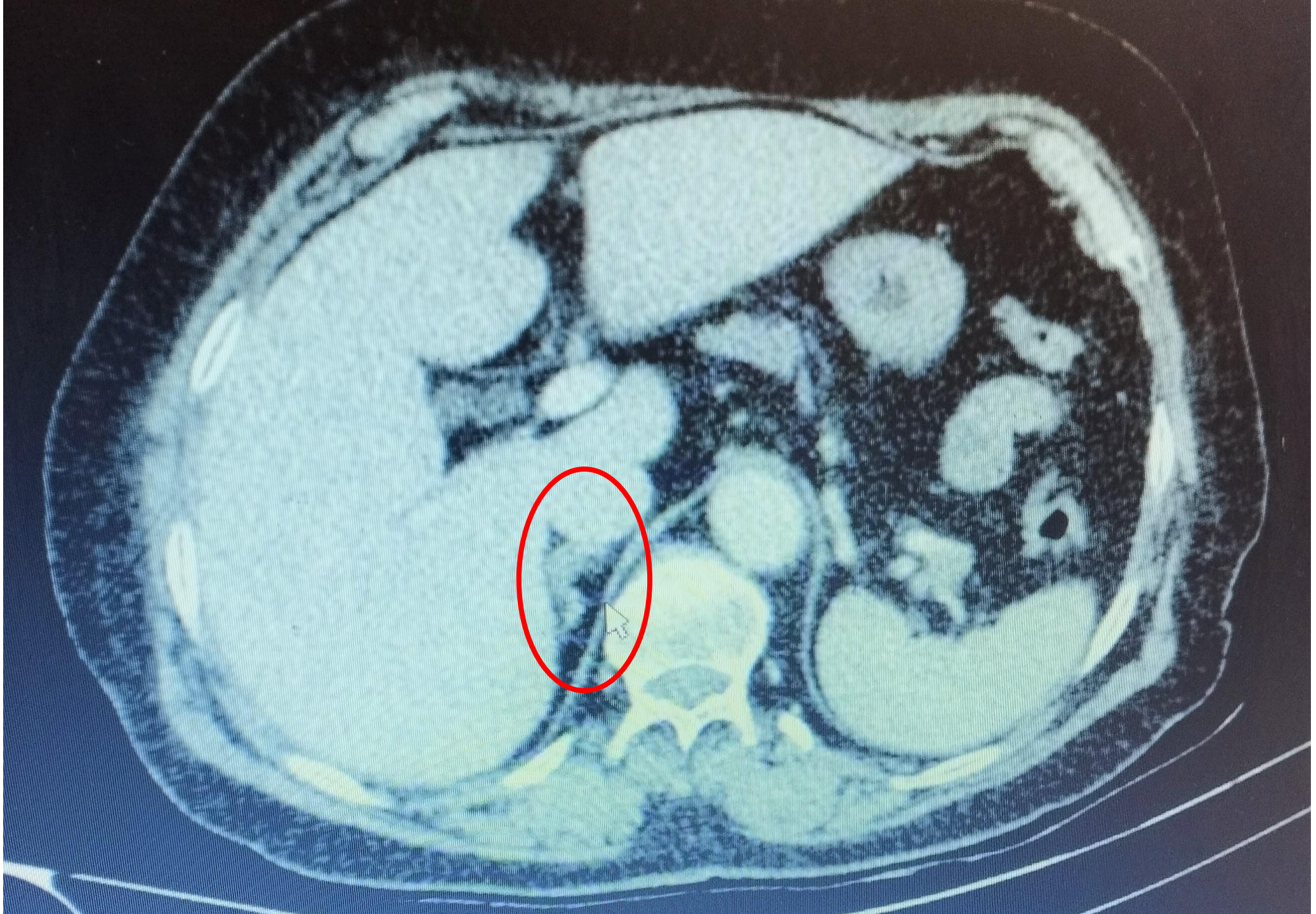
# Present Illness:

- After pancreatic surgery and left  adrenalectomy the patient's blood sugar has normalized, but the blood pressure is still high.

| | | | |
|---|---|---|---|
| FBS | 120 | 108 | 139 |
| 2hpp | 150 | 133 | 171 |

| | | | |
|---|---|---|---|
| BP | 140/90 | 170/100 | 160/90 |

On hypertensive drug



# Problem list:

- **Insulinoma**
  - Hypoglycemia
  - Pancreatic NET

**MEN I**

- **Small size left adrenal mass**
  - Hypertension
  - laboratory evidence of hyperaldosteronism
  - ODST (No suppression)

- **Hyperparathyroidism:**
  - PTH-dependent Hypercalcemia
  - osteoporosis

# AGENDA:

- Epidemiology and Clinical features of MEN I
- Diagnostic criteria for MEN I
- MEN I mutational analysis
- Management of pancreatic mass in MEN I
- Management of parathyroid mass in MEN I
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- Surveillance of “at-Risk” individuals
- Plan

# Epidemiology

- **The incidence of MEN1:** 1/30000
  - Rare (prevalence estimated from randomly chosen postmortem studies to be 0.25%)
  - 1–18% in patients with primary hyperparathyroidism
  - 10–38% in patients with gastrinomas
  - less than 3% in patients with pituitary tumors.
- The disorder affects all age groups, with a reported age range of 5 to 81 yr

**TABLE 148-1 Multiple Endocrine Neoplasia (MEN) Syndromes and Their Characteristic Tumors and Associated Genetic Abnormalities**

| Type (Chromosomal Location) | Tumors (Estimated Penetrance) | Gene; Most Frequently Mutated Codons |
|---|---|---|
| MEN 1 (11q13) | Parathyroid adenoma (90%)<br>Entero-pancreatic tumor (30% to 70%)<br>Gastrinoma (40%)<br>Insulinoma (10%)<br>Nonfunctioning and PPoma (20% to 55%)<br>Glucagonoma (<1%)<br>VIPoma (<1%)<br>Pituitary adenoma (30% to 40%)<br>Prolactinoma (20%)<br>Somatotropinoma (10%)<br>Corticotropinoma (<5%)<br>Non-functioning (<5%)<br>Associated Tumors<br>Adrenal cortical tumor (40%)<br>Pheochromocytoma (<1%)<br>Brochopulmonary NET (2%)<br>Thymic NET (2%)<br>Gastric NET (10%)<br>Lipomas (30%)<br>Angiofibromas (85%)<br>Collagenomas (70%)<br>Meningiomas (8%) | *MEN 1*<br>83/84, 4-bp del (≈4%)<br>119, 3-bp del (≈3%)<br>210-211, 4-bp del (≈8%)<br>418, 3-bp del (≈4%)<br>514-516, del or ins (≈7%)<br>Intron 4 ss (≈10%) |

# AGENDA:

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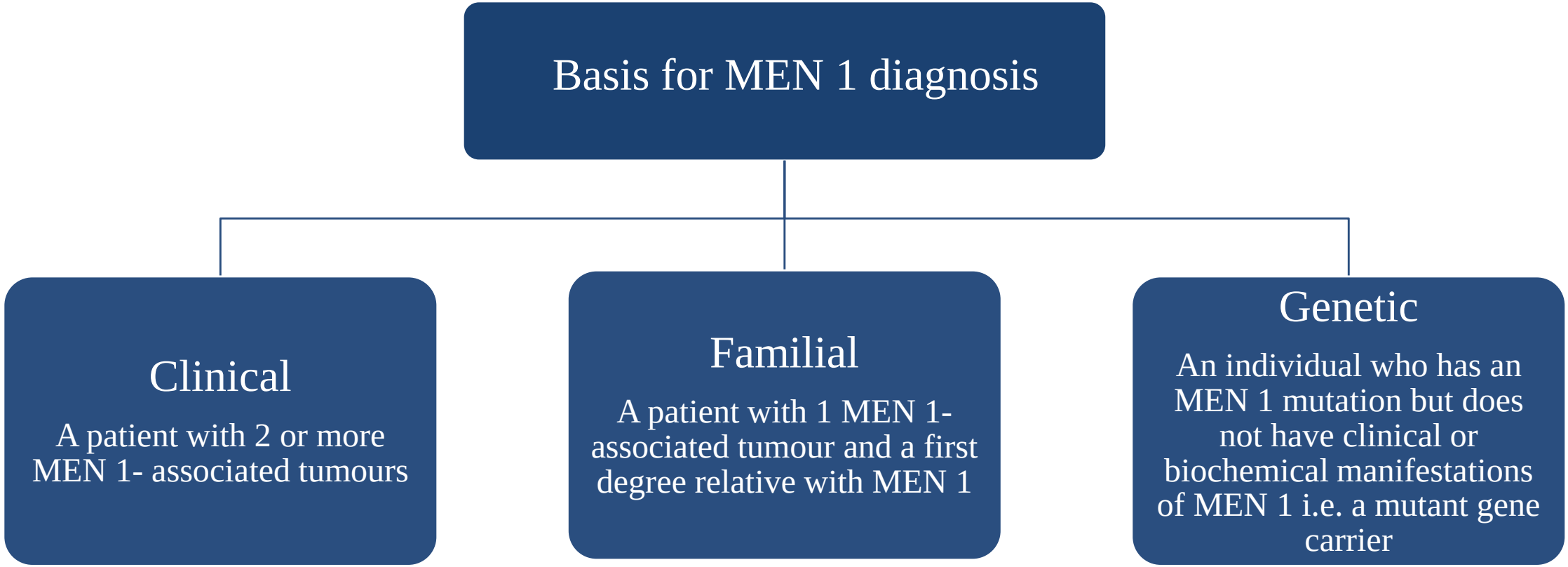
# Diagnosis

- A diagnosis of MEN1 may be established in an individual by ***one of three criteria.***



# AGENDA:

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# Genetics:

- An autosomal dominant disorder
- Mutations in the tumor suppressor gene *MEN1*
- located on chromosome 11q13
- The MEN1 encodes a 610-amino acid protein, menin.
- More than 10% of *MEN1* germline mutations arise *de novo* and may be transmitted to subsequent generations

# MEN1 phenocopies:

- Approximately 5 to 25% of patients with MEN1 may not have mutations of the *MEN1* gene:

1. may partly be attributable to differences in methods used to identify the mutations (do not systematically examine for large gene deletions)
2. Phenocopies
   - development of disease manifestations
   - usually associated with mutations of a particular gene but instead are due to another etiology.

# MEN1 phenocopies:

- These phenocopies occurred in two settings:

1. ***In the context of clinical MEN1***, in which patients with two MEN1-associated tumors, who did not have an *MEN1* mutation,
2. ***In the context of familial MEN1***, in which a patient with one MEN1-associated tumor, *e.g.* a prolactinoma, did not have the familial mutation

# MEN1 mutational analysis in clinical practice*:*

1. Confirmation of the clinical diagnosis
2. Identification of family members who harbor the *MEN1* mutation and ***require screening*** for tumor detection and early/appropriate treatment
3. Identification of the 50% of family members who do not harbor the familial germline *MEN1* mutation and can therefore be ***reassured*** and alleviated of the anxiety burden of developing future tumors.

MEN1 Clinical Practice Guidelines, J Clin Endocrinol Metab, September 2012

## Who should be tested?

### In an index case

- Meeting the clinical criteria for MEN 1 (i.e., two or more MEN 1–associated tumors or a diagnosis of familial MEN 1)
- Suspicious (i.e., multiple parathyroid adenomas before 40 years of age; recurrent hyperparathyroidism; gastrinoma or multiple pancreatic NETs at any age) or
- Atypical for MEN 1 (i.e., development of two nonclassical MEN 1–associated tumors, e.g., parathyroid and adrenal tumor)

### A first-degree relative of family member with known MEN 1 mutation

- Asymptomatic first-degree relative
- First-degree relative with familial MEN 1 (i.e., one MEN 1– associated tumor)

## When should testing be undertaken?

- As early as possible. (e.g. before 5 years of age in asymptomatic individuals)

the earliest reported ages of onset for a MEN1-associated tumors:

- pituitary tumor: 5 yr
- parathyroid tumor: 8 yr
- Insulinoma:8 yr
- nonfunctioning pancreatic NET:12 yr.

# Genetic testing:

MEN I mutational analysis in index case

If confirmed

Identification of first degree family members who harbor the MEN I mutation

# AGENDA:

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# Pancreatic Tumors:

- Pancreatic neuroendocrine tumors are estimated to occur in 30–80% of patients with MEN1, and in up to 80–100% of patients in postmortem studies.
- These pancreatic NET have an earlier age of onset in patients with MEN1 than in patients without MEN1.
- Given that MEN1- associated pancreatic NET are frequently ***multiple*** and their behavior uncertain, their accurate diagnosis and management presents significant challenges.

Clinical Practice Guidelines for Multiple Endocrine Neoplasia Type 1 (MEN1) 2012

# Pancreatic Tumors:

| | |
|---|---|
| Gastrinomas | more than 50% |
| Glucagonomas | fewer than 3% |
| **Insulinomas** | **10 to 30%** |
| (VIPomas) | in only a few patients |
| nonfunctioning pancreatic NET | in approximately 55% |

Clinical Practice Guidelines for Multiple Endocrine Neoplasia Type 1 (MEN1) 2012

# Insulinoma in MEN1

- Insulinomas, represent 10 to 30% of all pancreatic tumors in patients with MEN1.
- Insulinomas are usually a single lesion more than 5 mm in diameter.
- They can be associated with other neuroendocrine pancreatic tumors at the time of diagnosis in 10% of patients with MEN1, and ***the two tumors may arise at different times***.


- De Groot L, Jameson JL, eds. Endocrinology. 6th ed.

# Insulinoma in MEN1

- Insulinomas occur more often in patients with MEN1 who are younger than 40 yr.
- Many of them arise in individuals younger than 20 yr.
- Insulinomas may be the first manifestation of MEN1 in 10% of patient.

De Groot L, Jameson JL, eds. Endocrinology. 6th ed.

# Insulinoma in MEN1

- **Treatment is complicated:**
  - the possible presence of multiple insulinomas
  - other pancreatic neuroendocrine tumors
  - localization techniques may miss small tumors
  - and the continuing risk for pancreatic tumors after surgery.
- Multidisciplinary teams

BrandiML,AgarwalSK,PerrierND,etal.MultipleEndocrineNeoplasiaType1: Latest Insights. Endocr Rev 2021; 42:133.

# Insulinoma in MEN1

- There is no consensus on the optimal extent of surgical resection in patients with insulinoma,
- can range from
    - enucleation of a single tumor,
    - distal pancreatectomy
    - partial pancreatectomy,
    - excision of all the macroscopic pancreatic neoplasms and enucleation of nodules in the remaining pancreas.

MEN1: Genetic and Clinical Diagnosis , June 2019 | fronties in endocrinology

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# Parathyroid tumors:

- Primary hyperparathyroidism is the most common feature of MEN1 and occurs in approximately 95% of all patients with MEN1.
- The primary hyperparathyroidism associated with MEN1 has
  - earlier age at onset (20 to 25 yr vs. 55 yr),
  - greater reduction in bone mineral density,
  - and an equal male/female ratio (1:1 vs. 1:3)

William' 2020

# Guidelines for surgery in MEN 1-associated PHPT

| | |
|---|---|
| Serum calcium | >10 mg/dL elevation(>300 mmol/l) |
| Renal | • U Ca >400 mg/24hr<br>• eGFR <60 mL/min<br>• Nephrolithiasis<br>• Calcification on renal imaging |
| Bone | • T-score < −2.5<br>• Vertebral fracture on imaging<br>• Previous fragility fracture |

The indications for referral to surgery are similar to those in sporadic PHPT.

William' 2020

# Surgery:

- Conventional open bilateral exploration with subtotal parathyroidectomy (at least 3.5 glands) or total parathyroidectomy is recommended (1 ⨁⨁⨁◯).
- Concurrent transcervical thymectomy is also suggested at the time of surgery (2 ⨁⨁◯◯).
- Total parathyroidectomy with autotransplantation may be considered (2 ⨁⨁⨁◯).
- Minimally invasive parathyroidectomy is usually not recommended because multiple glands are typically affected (1 ⨁⨁⨁◯).

MEN1 Clinical Practice Guidelines, J Clin Endocrinol Metab, September 2012

# Surgery:

- Preoperative imaging is of limited benefit
- All parathyroid glands may be affected.
- **Medical treatment ( Calcimimetics)**

Sporadic and MEN1-related primary hyperparathyroidism: differences in clinical expression and severity. J Bone Miner Res 24:1404 –1410

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# Adrenocortical involvement:

- 20-55% (~75%) → most of tumors are asymptomatic, nonfunctional
  → <10% : primary hyperaldo, Cushing
- Include: cortical adenomas, multiple adenomas, hyperplasia, nodular hyperplasia, cysts, or carcinomas.
- F=M

Williams 2020

715 MEN1 patients and 144 patients with sporadic adrenal incidentalomas.

| | Sporadic incidentaloma | MEN1 | P-value |
|---|---|---|---|
| Mean age(years) | 55±0.9 | 46.1±1.4 | P<0.05 |
| bilateral | 7.3% | 12.5% | P=0.24 |
| Endocrine hypersecretion | 6.9% | 15.3% | P=0.03 |
| ACC | 1.3% | 13.8% | P<0.05 |
| pheo | 5% | 1% | P<0.05 |

Compared with incidentalomas, MEN1-related tumours exhibited more cases of primary hyperaldosteronism, fewer pheochromocytomas and more adrenocortical carcinomas .

European Journal of Endocrinology (2012) 166 269–279

# Adrenocortical involvement:

- Adrenocortical tumors in MEN1 patients always are observed in conjunction with tumors in the endocrine pancreas.

- Bilateral nodular hyperplasia
  - 49 patient (36patient had adrenal lesion (35% nodular hyperplasia)).

Journal of the Endocrine Society September 2020

# Radiologic characteristics of adrenal lesions

- The mean adrenal lesion diameter at diagnosis was 17.4 mm (9-36 mm), with most of the lesions (78%) being 20 mm diameter or smaller,
- Most of the patients (67%) had bilateral adrenal involvement.
- All the adrenal lesions identified had less than 10 Hounsfield units on CT scan and had a fast washout of the contrast agent.

J Clin Endocrinol Metab, October 2019

# Treatment:

- The risk for malignancy is increased if the tumor has a diameter greater than 4 cm
- Atypical or suspicious radiologic features and are 1 to 4 cm in diameter; or show significant measurable growth over a 6-month interval.
- The treatment of functioning (i.e., secreting) adrenal tumors in MEN 1 patients is similar to that for tumors occurring in non–MEN 1 patients.

De Groot L, Jameson JL, eds. Endocrinology. 6th ed.

# AGENDA:

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# Surveillance:

- In the absence of treatment, endocrine tumors are associated with an earlier mortality in patients with MEN 1.
- Untreated patients with MEN 1 have a decreased life expectancy with a ***50% probability of death by 50 years of age***, and the cause of death in 50% to 70% of patients with MEN 1 is usually a malignant tumor process or sequelae of the disease.
- More than ***~65% individuals with MEN 1 die of causes directly related to MEN 1***.

De Groot L, Jameson JL, eds. Endocrinology. 6th ed.

**TABLE 42.2 Suggested Screening Guidelines for Individuals at Risk of MEN1**

| MEN1-Associated Tumor | Age to Begin Screening (Years) | Biochemical Screening Test (Annually) | Imaging Screening Test (Time Interval) |
|---|---|---|---|
| Parathyroid | 8 | Calcium, PTH | None |
| Pancreatic | | | |
| Gastrinoma | 20 | Fasting gastrin | None |
| Insulinoma | 5 | Fasting glucose (± insulin) | None |
| Other pancreatic NET (e.g., nonfunctioning) | 10 | Chromogranin A, gastrointestinal hormone profile[a] (e.g., glucagon, pancreatic polypeptide, vasoactive intestinal peptide) | MRI abdomen, EUS (annually) |
| Pituitary | | | |
| Prolactinoma | 5 | Prolactin | None |
| Somatotropinoma | 5 | Insulin-like growth factor 1 | None |
| Other pituitary adenoma (e.g., nonfunctioning NET) | 10[b] | None, unless signs or symptoms of functioning tumor (e.g., corticotroph adenoma) | MRI pituitary (every 3 years) |
| Adrenocortical | <10 | None, unless signs or symptoms of functioning tumor or tumor >1 cm on imaging | MRI abdomen (annually) |
| Thymic/bronchial carcinoid | 15 | None | CT or MRI chest (every 1–2 years) |

[a]Although chromogranin A, pancreatic polypeptide, and glucagon concentrations can be elevated with nonfunctioning PNETs, they have low sensitivity and specificity such that their value is debated.

[b]Although pituitary tumors are reported in MEN1 patients as young as 5 years of age, in the absence of symptoms, signs, or biochemical evidence of a pituitary adenoma, pituitary imaging may be delayed until after 10 years of age to coincide with pancreatic imaging.

*CT*, Computed tomography; *EUS*, endoscopic ultrasound; *MEN1*, multiple endocrine neoplasia type 1; *MRI*, magnetic resonance imaging; *NET*, neuroendocrine tumor; *PTH*, parathyroid hormone.

Modified from Thakker RV, Newey PJ, Walls GV, et al. Clinical practice guidelines for multiple endocrine neoplasia type 1 (MEN1). *J Clin Endocrinol Metab*. 2012;97(9):2990–3011.

Williams 2020

# AGENDA:

- Epidemiology and Clinical features of MEN I
- Diagnostic criteria for MEN I
- MEN I mutational analysis
- Management of pancreatic mass in MEN I
- Management of parathyroid mass in MEN I
- Management of adrenocortical tumors in MEN I
- Surveillance of “at-Risk” individuals
- **Plan**

# Treatment Plan

- **Hyperparathyroidism:**
  - **PTH-dependent Hypercalcemia**
  - **osteoporosis**

→

subtotal parathyroidectomy
(removal of 3.5 glands)
+
transcervical thymectomy

- **Hyperaldosteronism:**
- **Possible autonomous cortisol secretion:**

- Stopping the evening dose of Hydrocortisone one month after surgery and checking cortisol at 8 am.
- Checking aldosterone and PRA (After two weeks of changing the hypertensive medicine)

# Treatment Plan

## Genetic testing:

MEN I mutational analysis in index case

If confirmed

Identification of first degree family members who harbor the MEN I mutation

# surveillance:

## Screening:

Checking Ca, Ph, PTH

first degree family members

## surveillance:

# Thank you for your attention!