IN THE NAME OF GOD

COMPUTED TOMOGRAPHIC SCAN

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COMPUTED TOMOGRAPHIC SCAN

- The method utilizes an x-ray tube, which rotates axially around the patient
- and a diametrically opposed array of detectors, which detect the residual radiation traversing the body.

COMPUTED TOMOGRAPHIC SCAN

- The resulting images are a composite of an array of individual picture elements (pixels), each with a numerical value that is related to the x-ray attenuation at a specific position in the displayed body part.

COMPUTED TOMOGRAPHIC SCAN

- These values, called CT numbers, represent the difference in x-ray attenuation between a given material and water, and are expressed in Hounsfield units.

COMPARISON WITH CONVENTIONAL RADIOGRAPHY

- Conventional radiographs detect differences in contrast of about 5 percent, whereas CT can detect differences of less than 0.5 percent (5 HU).

- CT provides images free of superimposition of structures, thereby eliminating the effects of overlapping anatomic complexity.

COMPUTED TOMOGRAPHIC SCAN

- CONVENTIONAL
- SPIRAL

ADVANTAGES OF SPIRAL

- TIME AND ARTIFACT
- NO MISS OF LESION WITH MOTION
- MULTIPLE VIEW
- 2D AND 3D SCAN
- LOW CONTRAST MATERIAL
- CT-ANGIOGRAPHY

VOXEL

MINIMUM VOLUME OF TISSUE THAT HAVE ATTENUATION EFFECT ON CROSSING X-RAY (ALTERED BY WINDOWS)

HUNSFIELD UNITS
(CT NUMBERS OR CT DENSITY)

ATTENUATION COEFFICIENT OF EACH TISSUE ON CROSSING X-RAY

CT Density

Moiety	Hounsfeld units
Bone	1000
Calcium	100
Acute blood	85
Tumor	30-60
Gray matter	35-40
White matter	25-30
CSF	0
Adipose	-100
Air	-1000

CT-SCAN WITH CONSTRAST

MECHANISM OF ENHACEMENT IS BASED ON DISRUPTION OF BBB BY DISEASE PROCESSES

Computed Tomography in stroke

Duration	Without contrast	With contrast
Hyperacute	NL or blurring of gray-white matter junction	No enhancement
Acute	Poorly defined hypodensity maximal edema	No enhancement or mild gyral enhancement
Subacute	Hypodensity, less edema	Gyral enhancement
Remote	Sharply defined hypodensity	Enhancement in 6 weeks

CT in Hemorrhage

Duration	Without contrast
Acute	Hyperdesity, mass effect
Subacute	Hypodense periphery, Hyperdense center, mass effect
Remote	Hypodense

Checklist for reading cranial CT

- Name, age, sex, date, center, type of CT, serial number, PMH.
- Soft tissues (trauma, tumor) and paranasal sinuses.
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- Calcification in choroid plexus and pineal body and any additional hyperdendsity.
- BG, Internal capsule, Brainstems, cerebellum for infarction.
- Focal lesion or edema around paraventricular and paracortical white matter.


LOGHMAN HAKIM HOSPITAL - TEHRAN PF
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07/26-03-(1384)
WITH I.V. CONTRAST
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OM+10.0mm
15.5deg
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W: 160
L: 56
120kV 130mA
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130mAs
L
x1.33
BF2
Stand
A=250mm
X=0 Y=0
7800 SHIMADZU SPIRAL
ELAHIPOR
W: 110

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02/21-04-(1385)
WITHOUT CONTRAST
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47204. 1. 1. 2
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X=1 Y=6
7800 SHIMADZU SPIRAL
LOGHMAN HAKIM HOSPITAL - TEHRAN
GHASEMI MEHR
W: 158
L: 51


02/21-04-(1385)
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A=208mm
X=1 Y=6
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LOGHMAN HAKIM HOSPITAL - TEHRAN
GHASEMI MEHR
W: 168
L: 50


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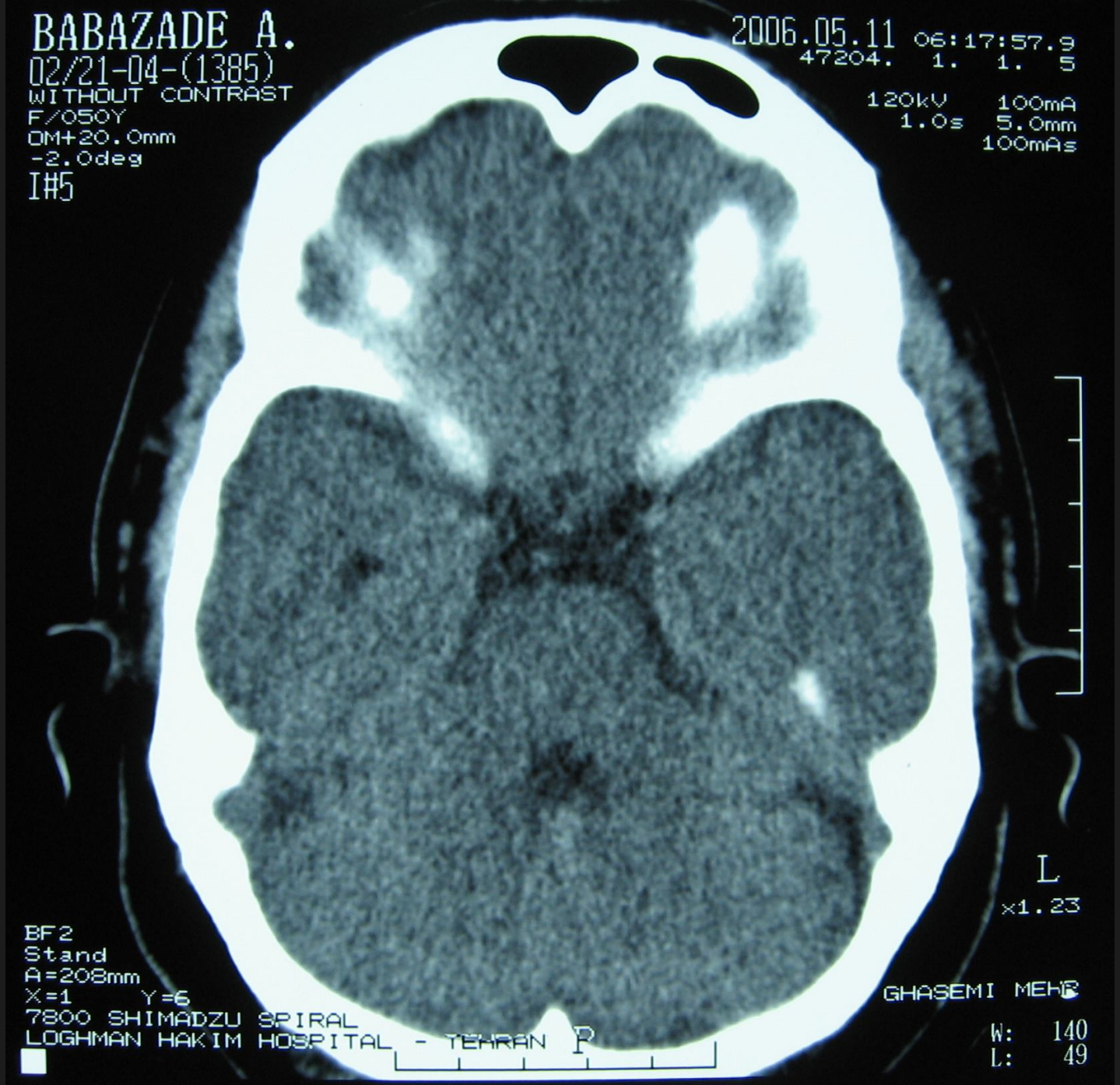
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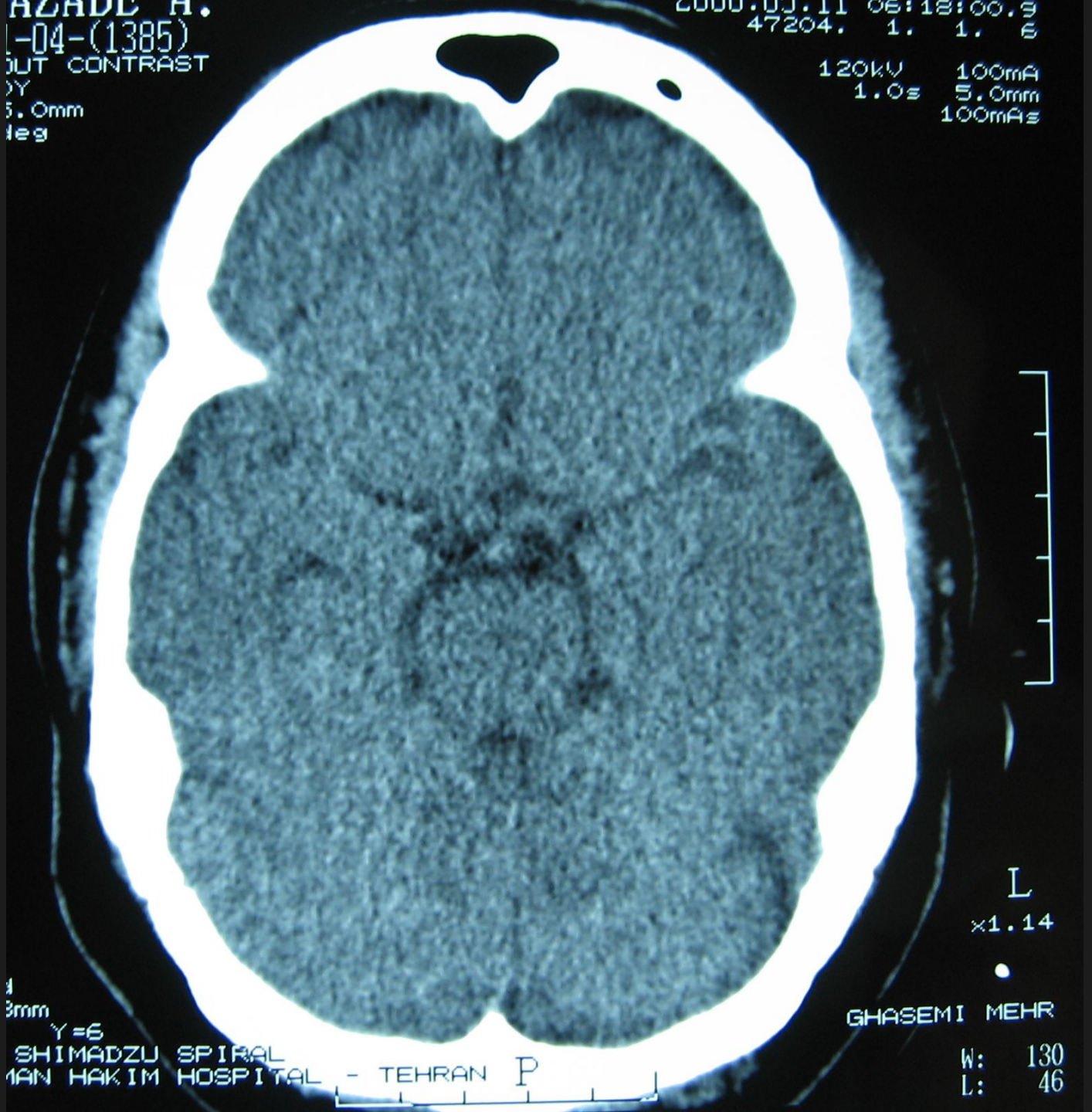
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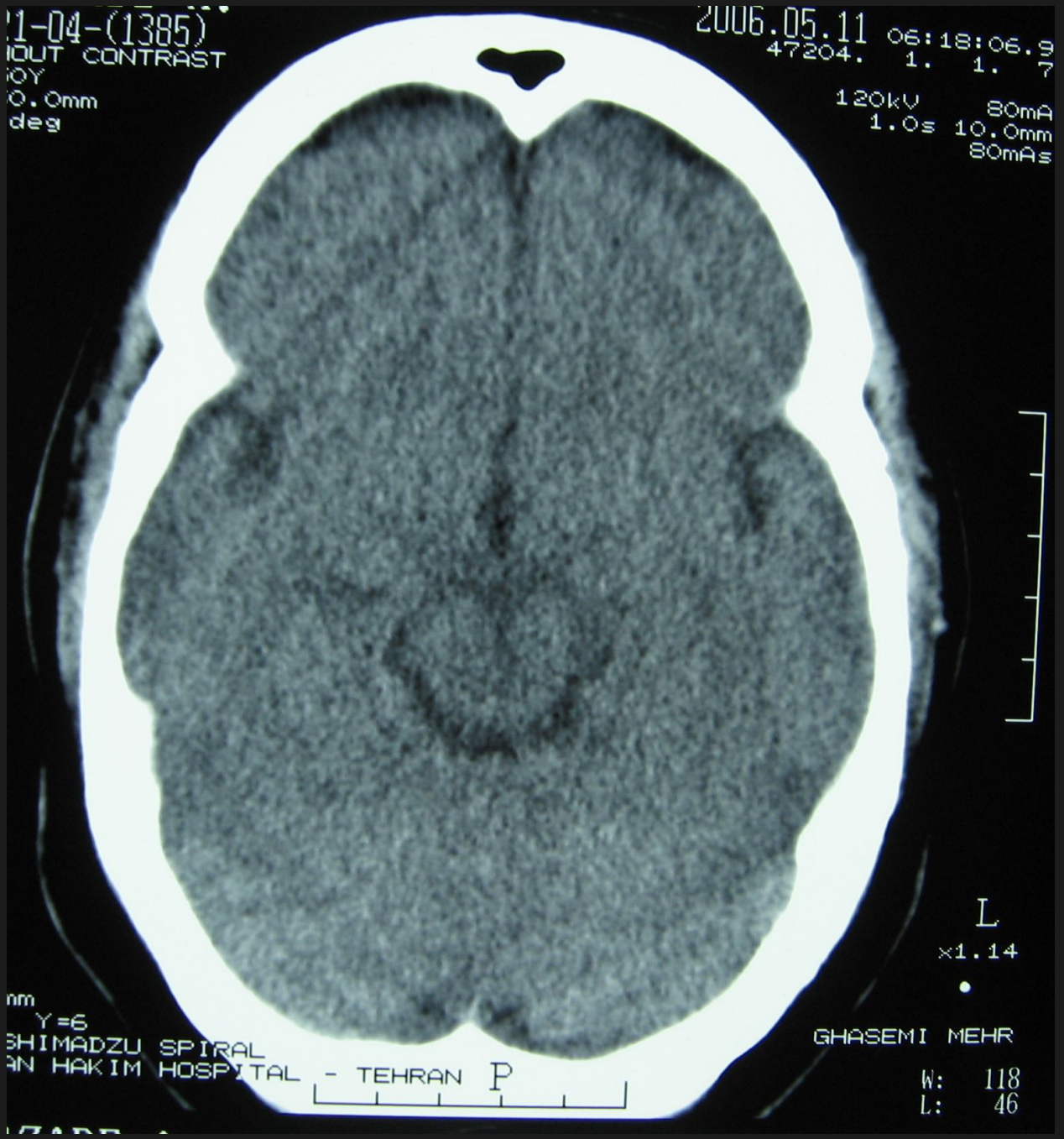
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L: 46


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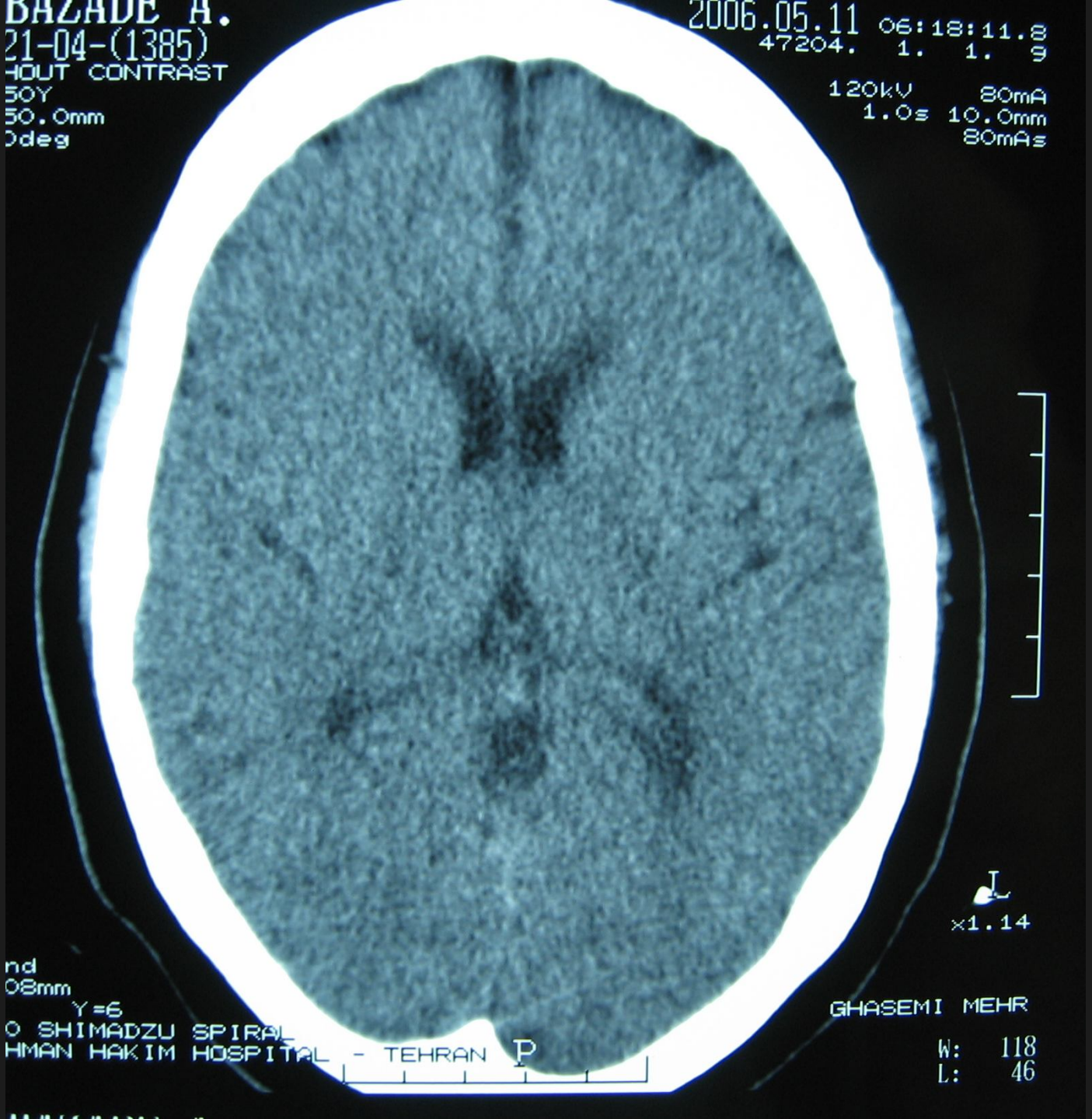
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W: 118
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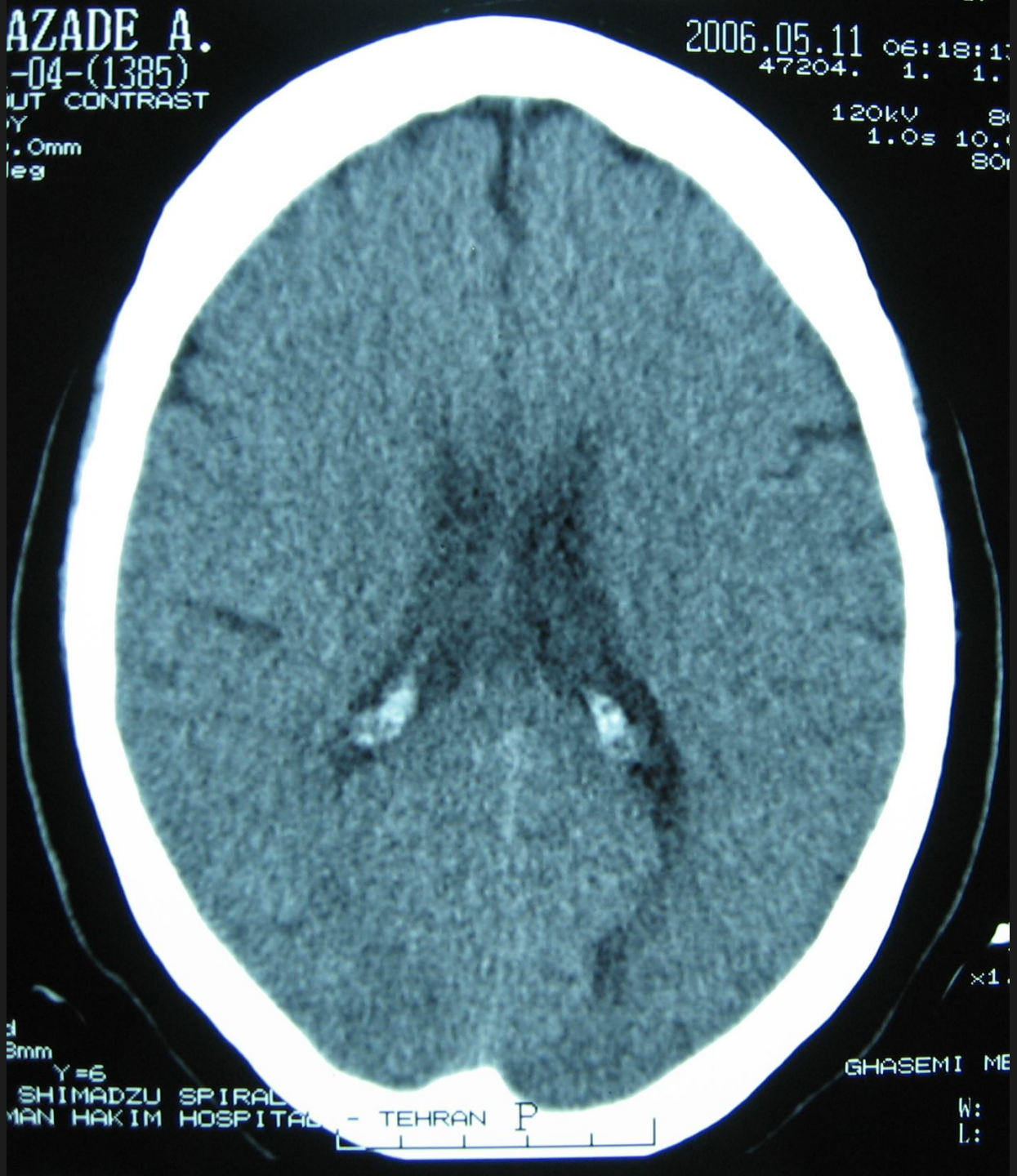
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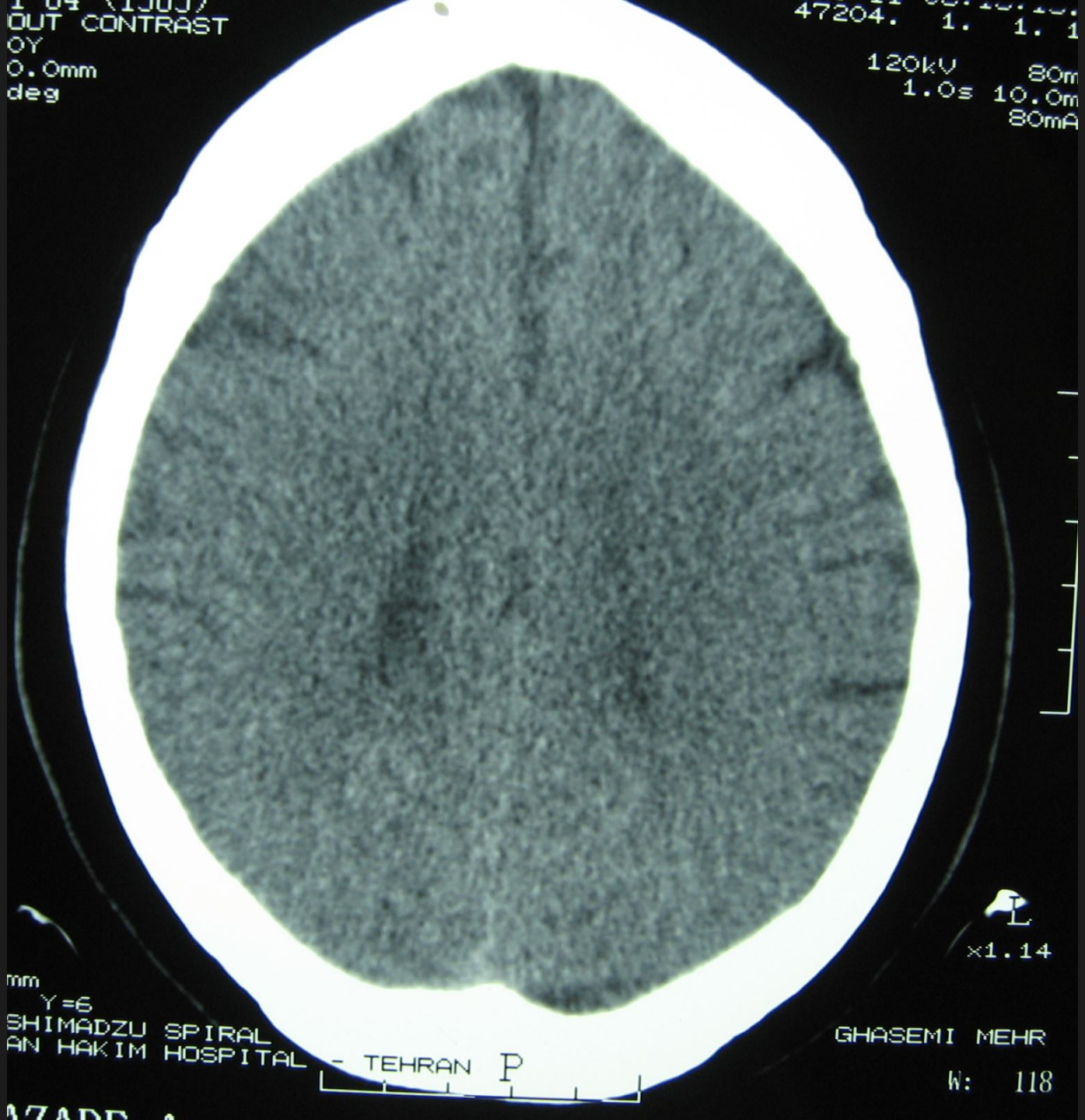
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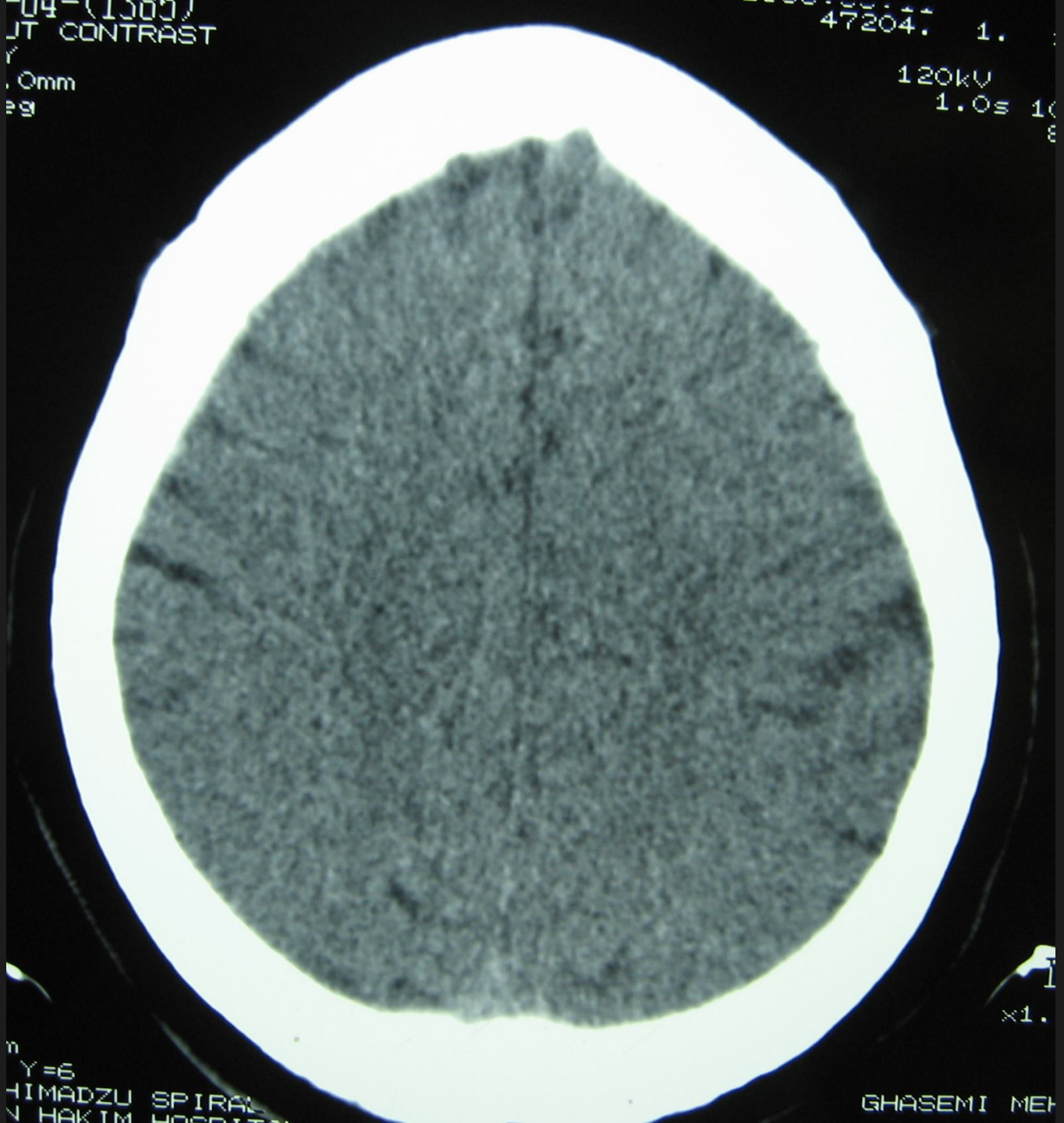
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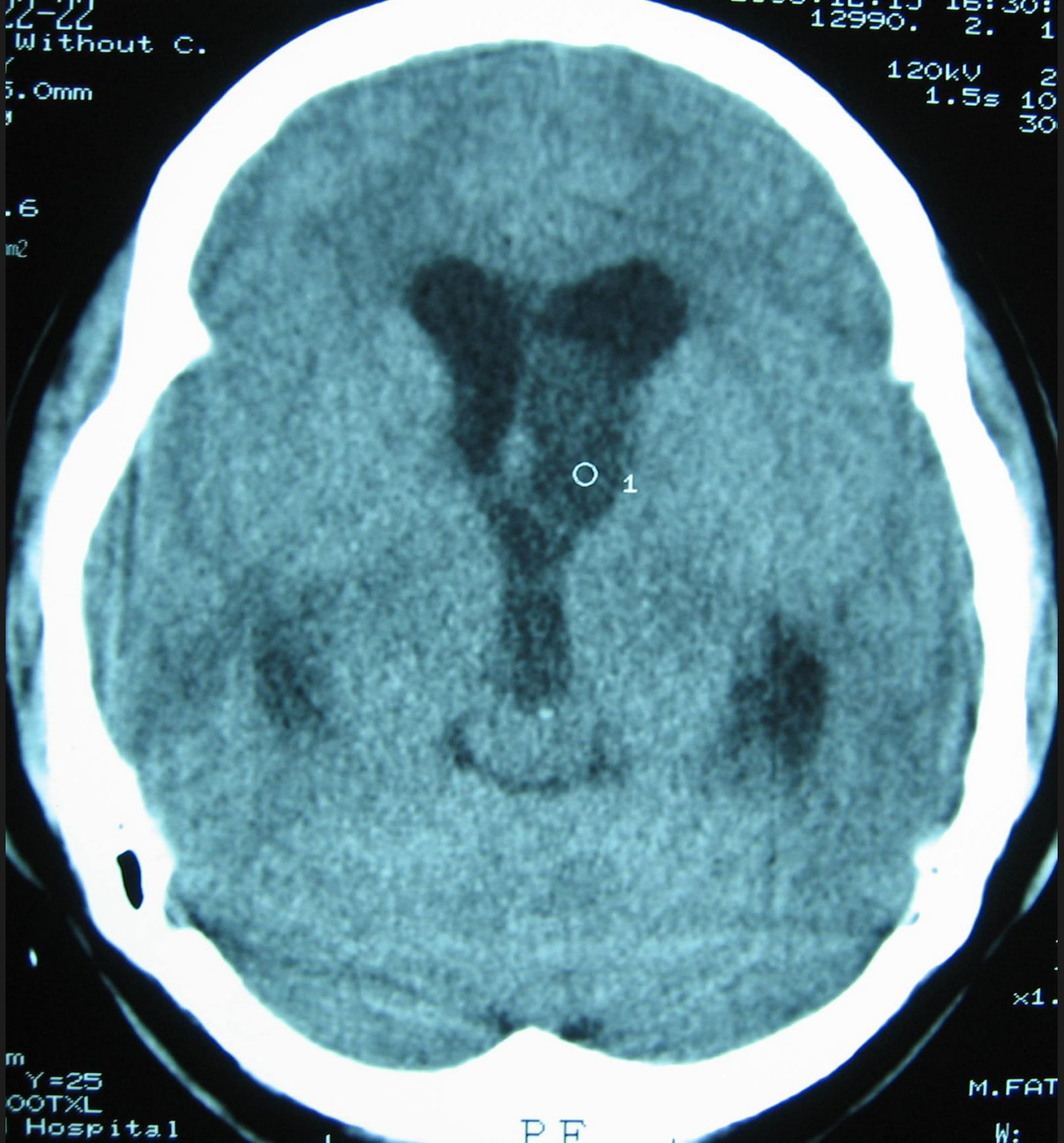
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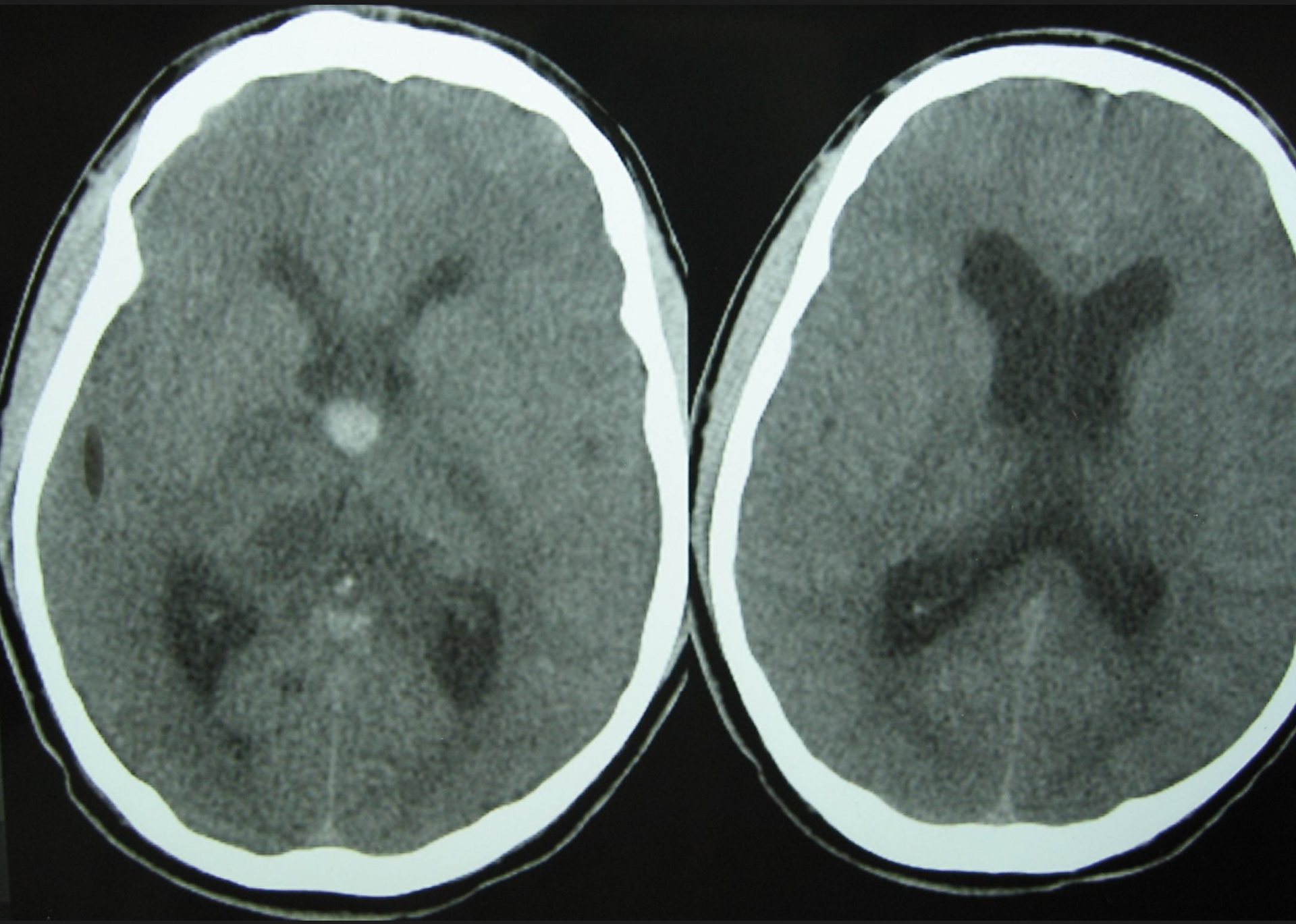

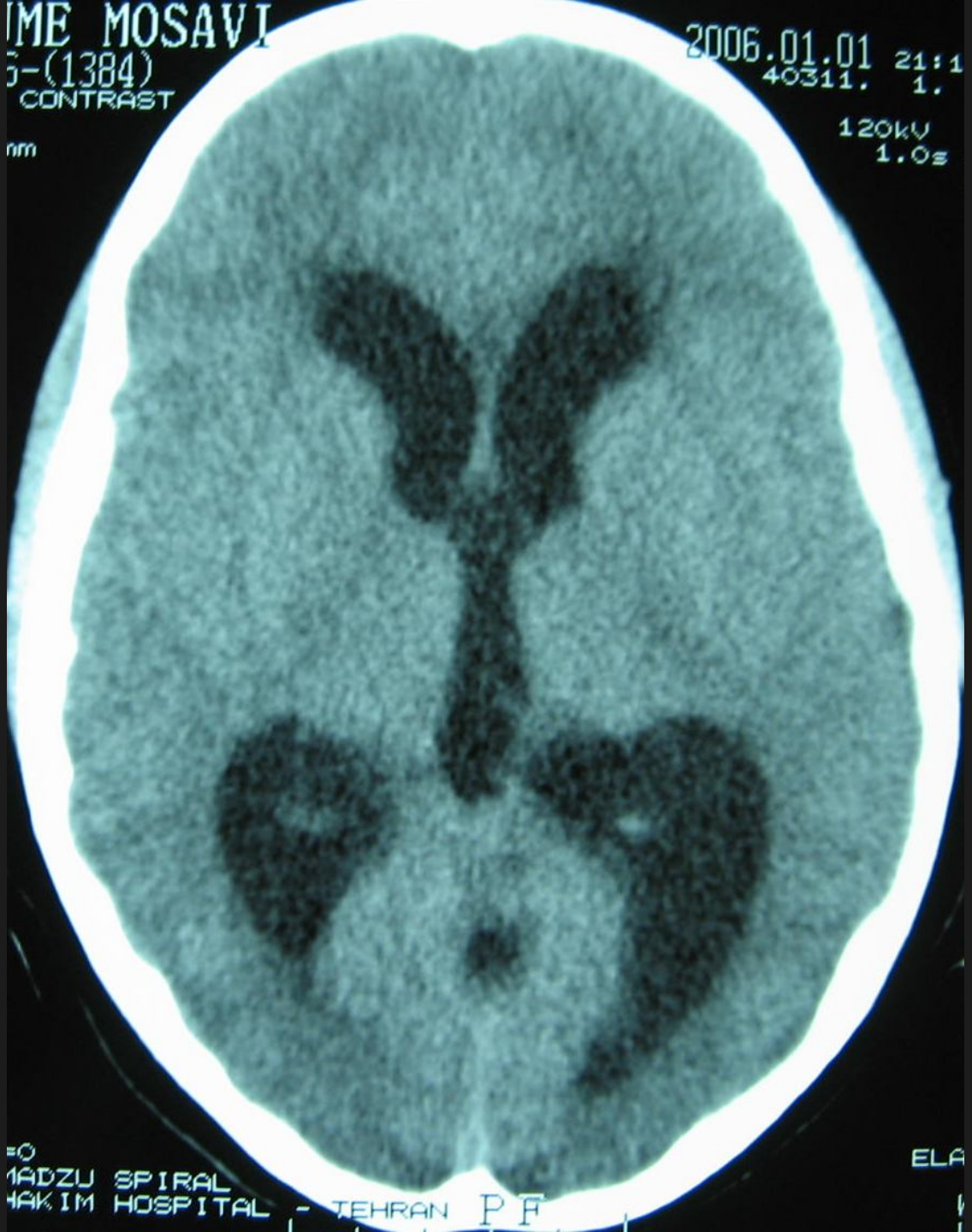
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MADZU SPIRAL
HAKIM HOSPITAL - TEHRAN

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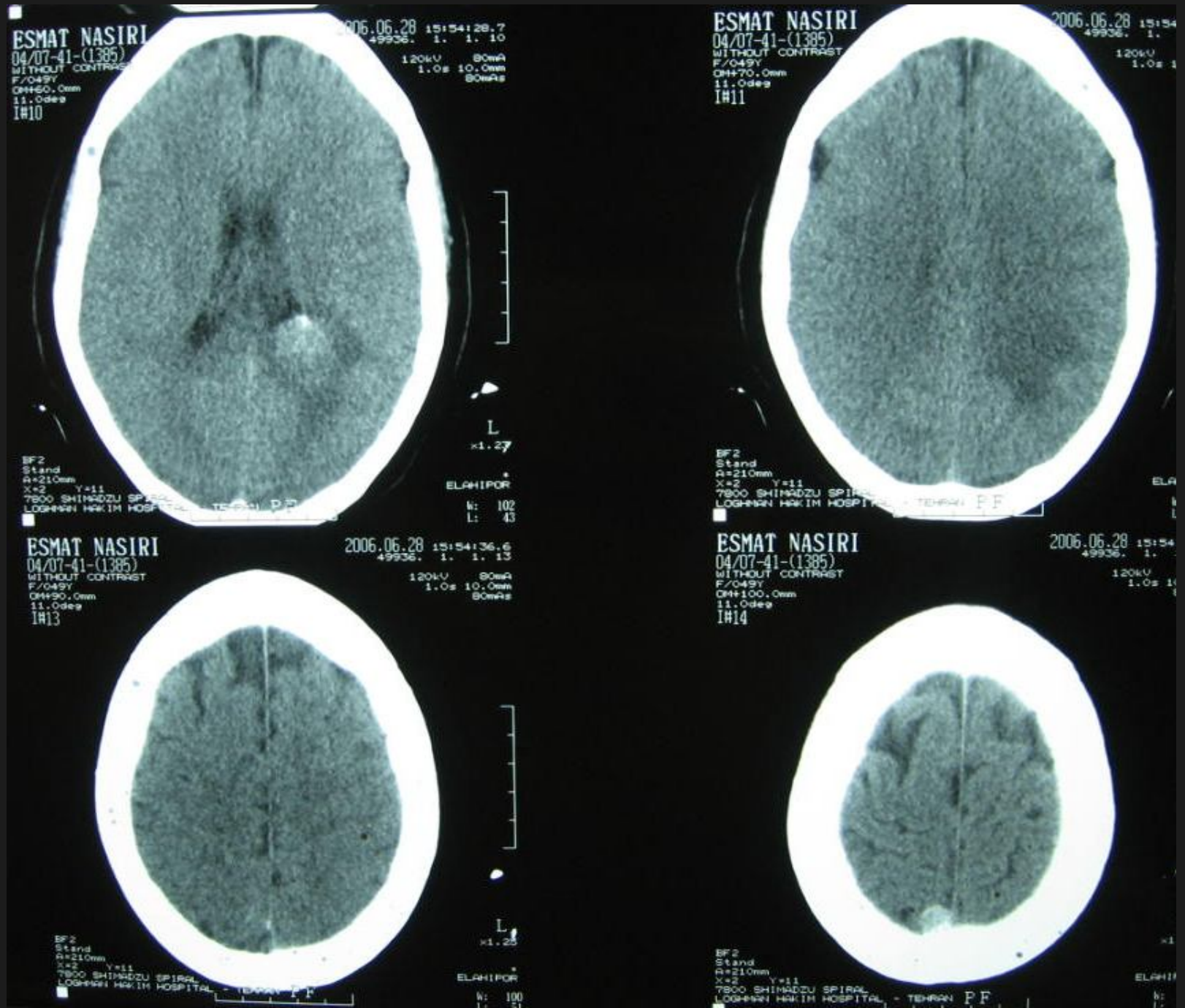
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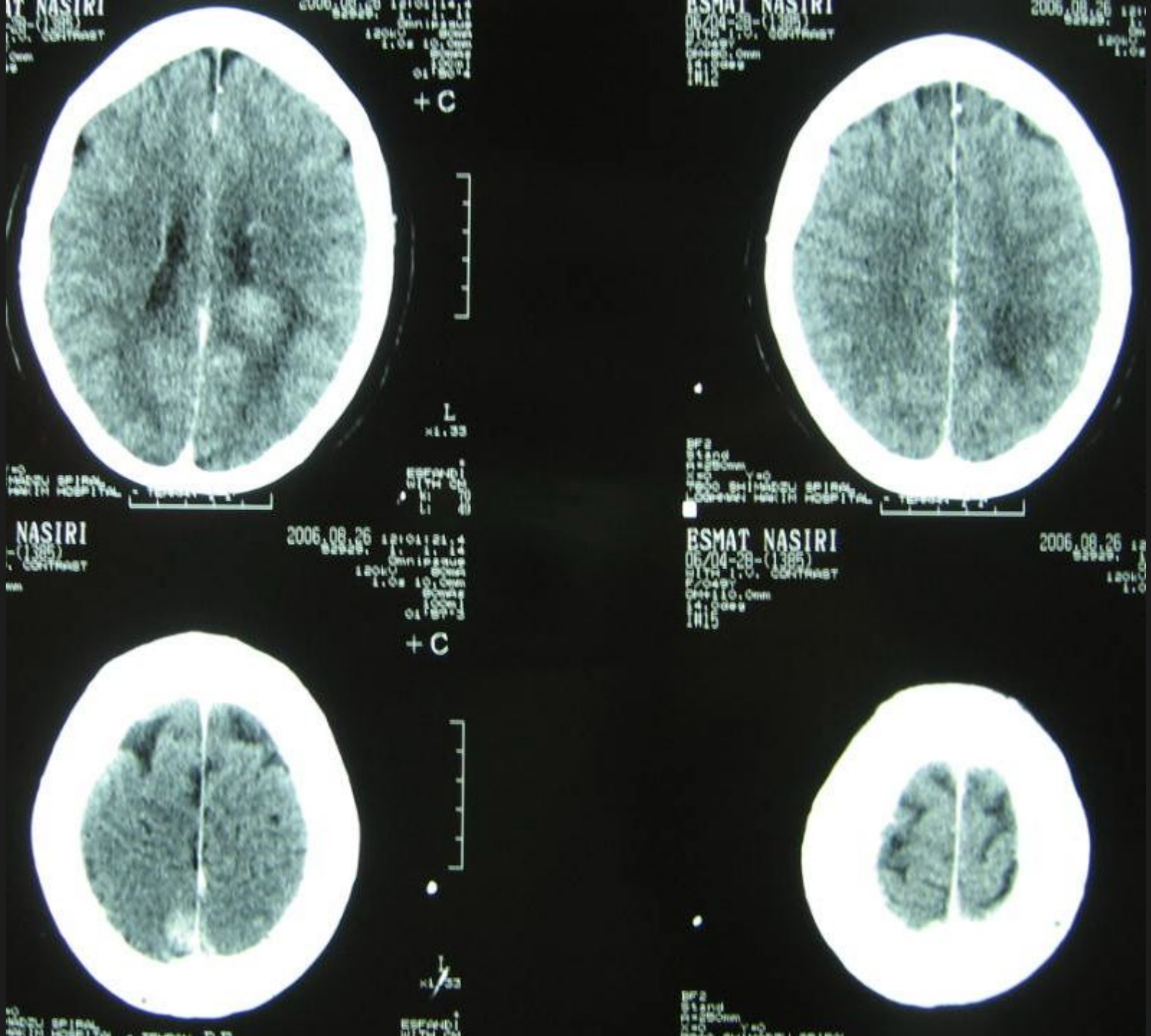
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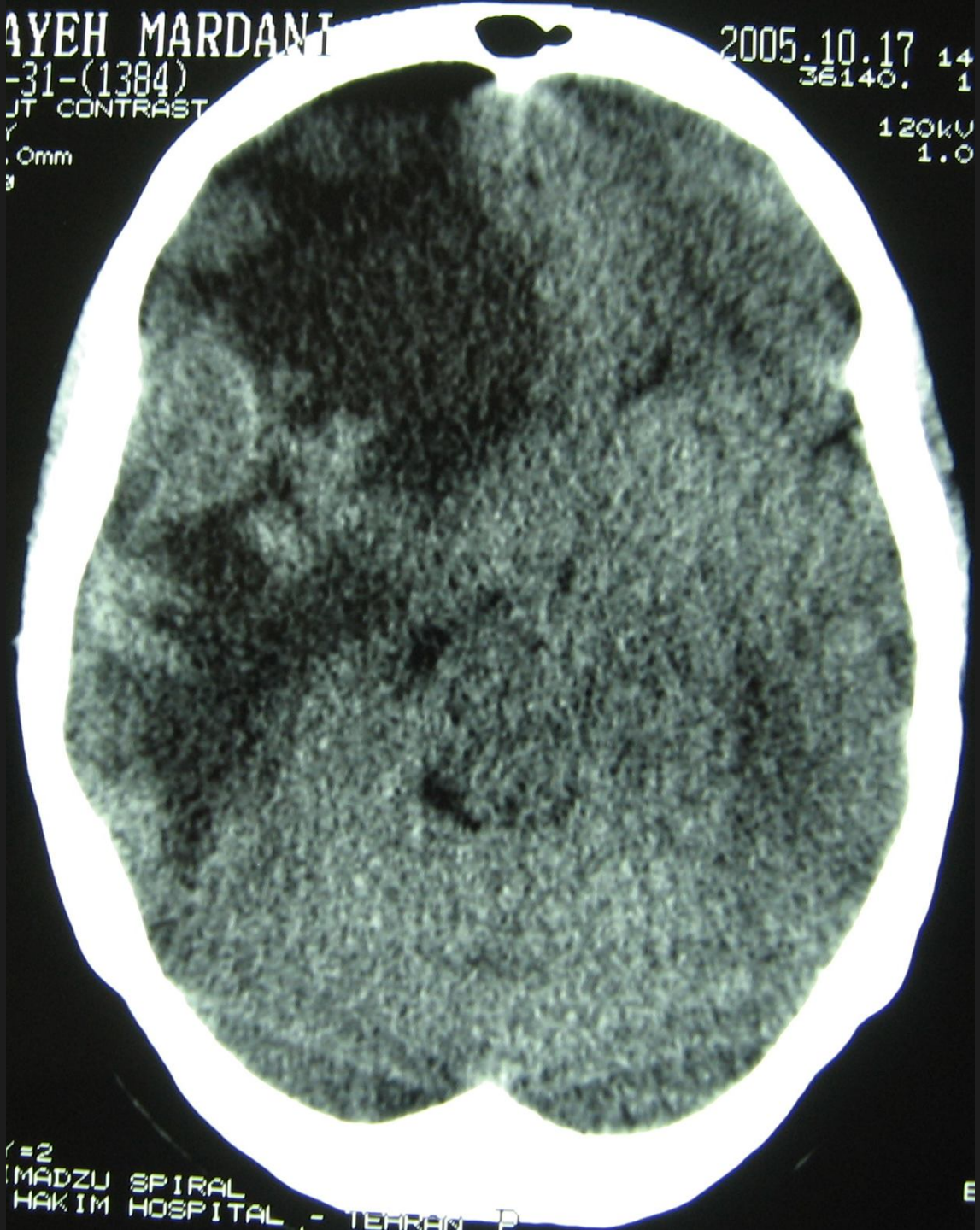
AYEH MARDANI
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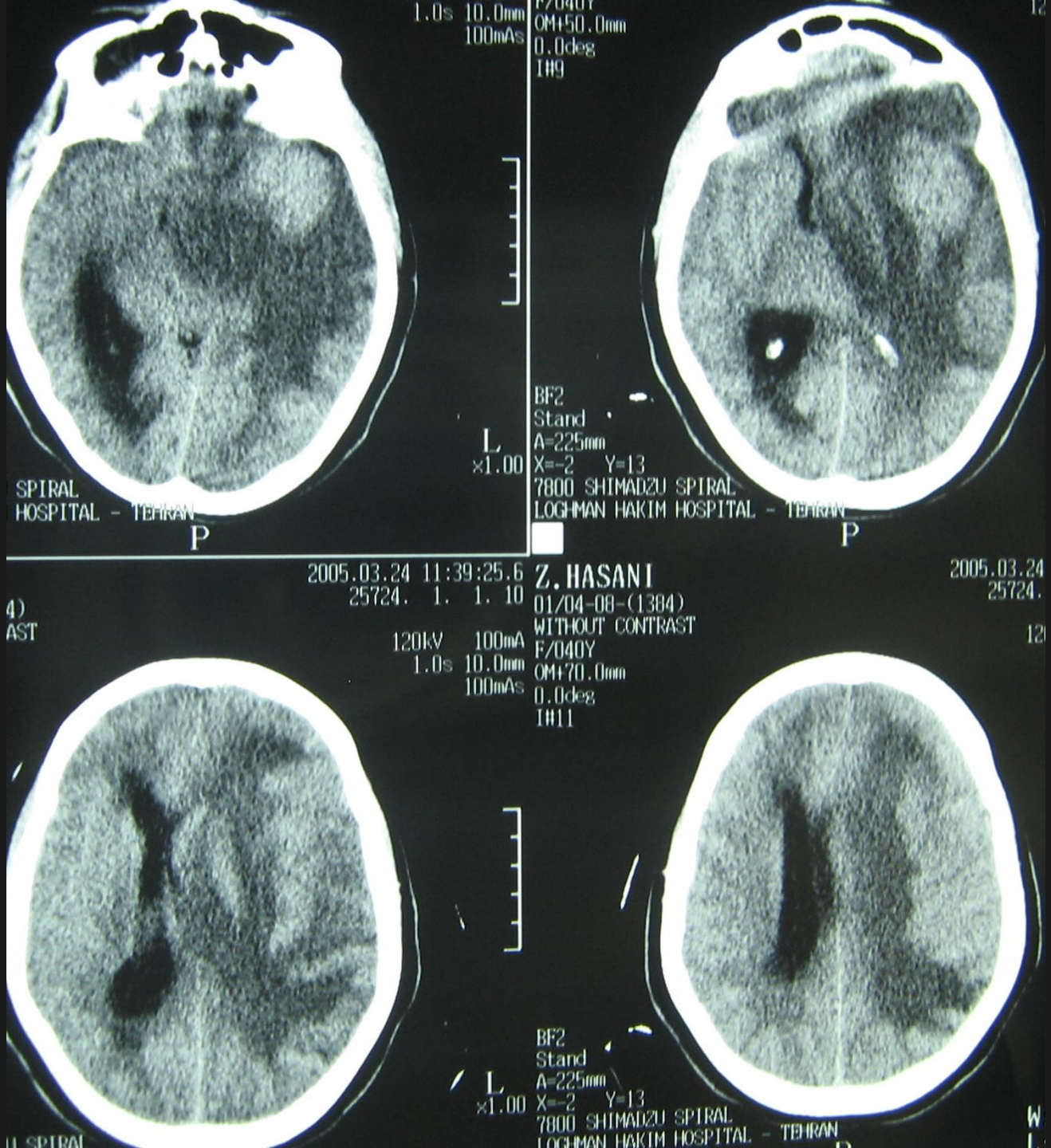
MADZU SPIRAL
HAKIM HOSPITAL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SPIRAL
HOSPITAL - TEHRAN
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7800 SHIMADZU SPIRAL
LOGHMAN HAKIM HOSPITAL - TEHRAN
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Z.HASANI
01/04-08-(1384)
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7800 SHIMADZU SPIRAL
LOGHMAN HAKIM HOSPITAL - TEHRAN
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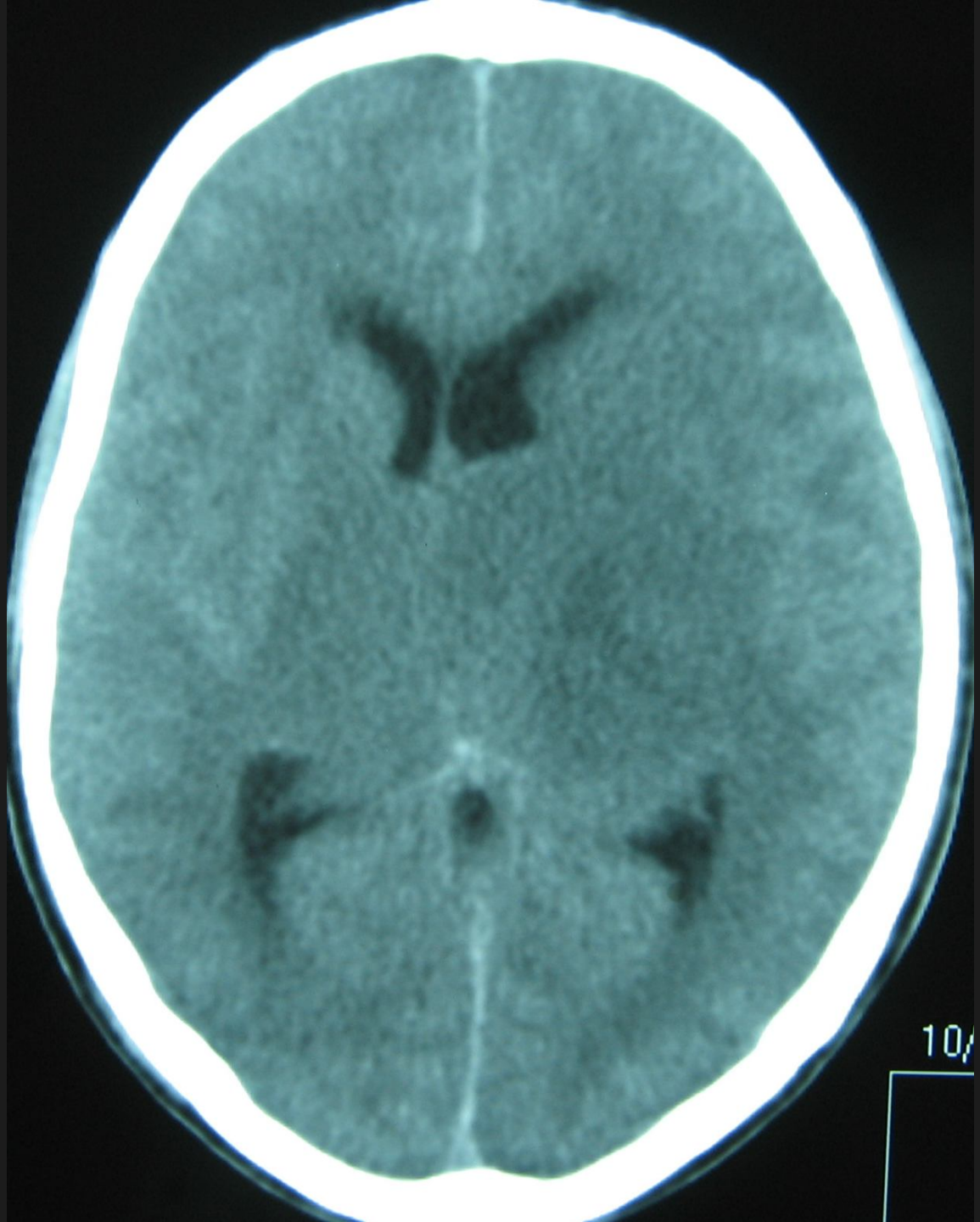

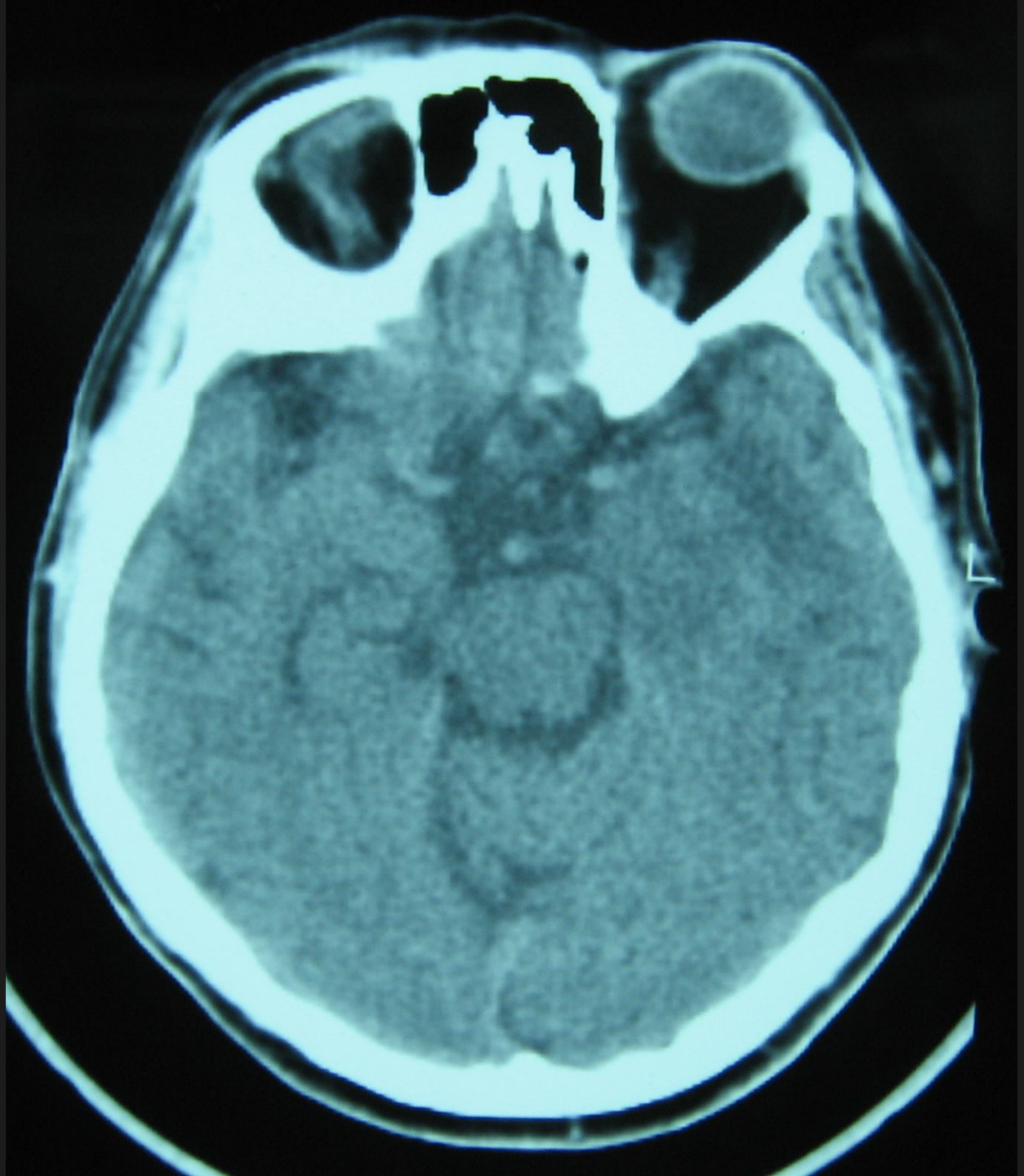

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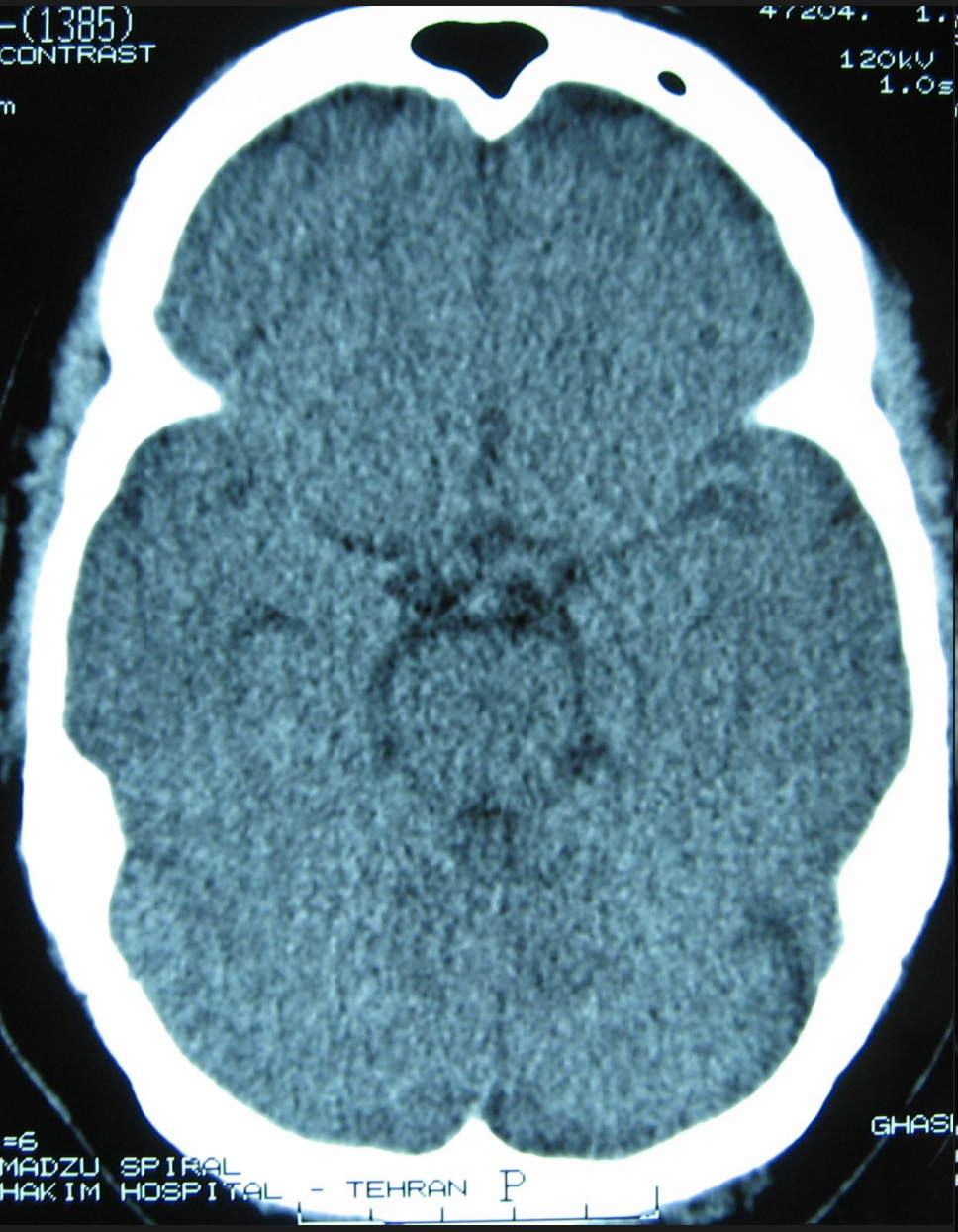
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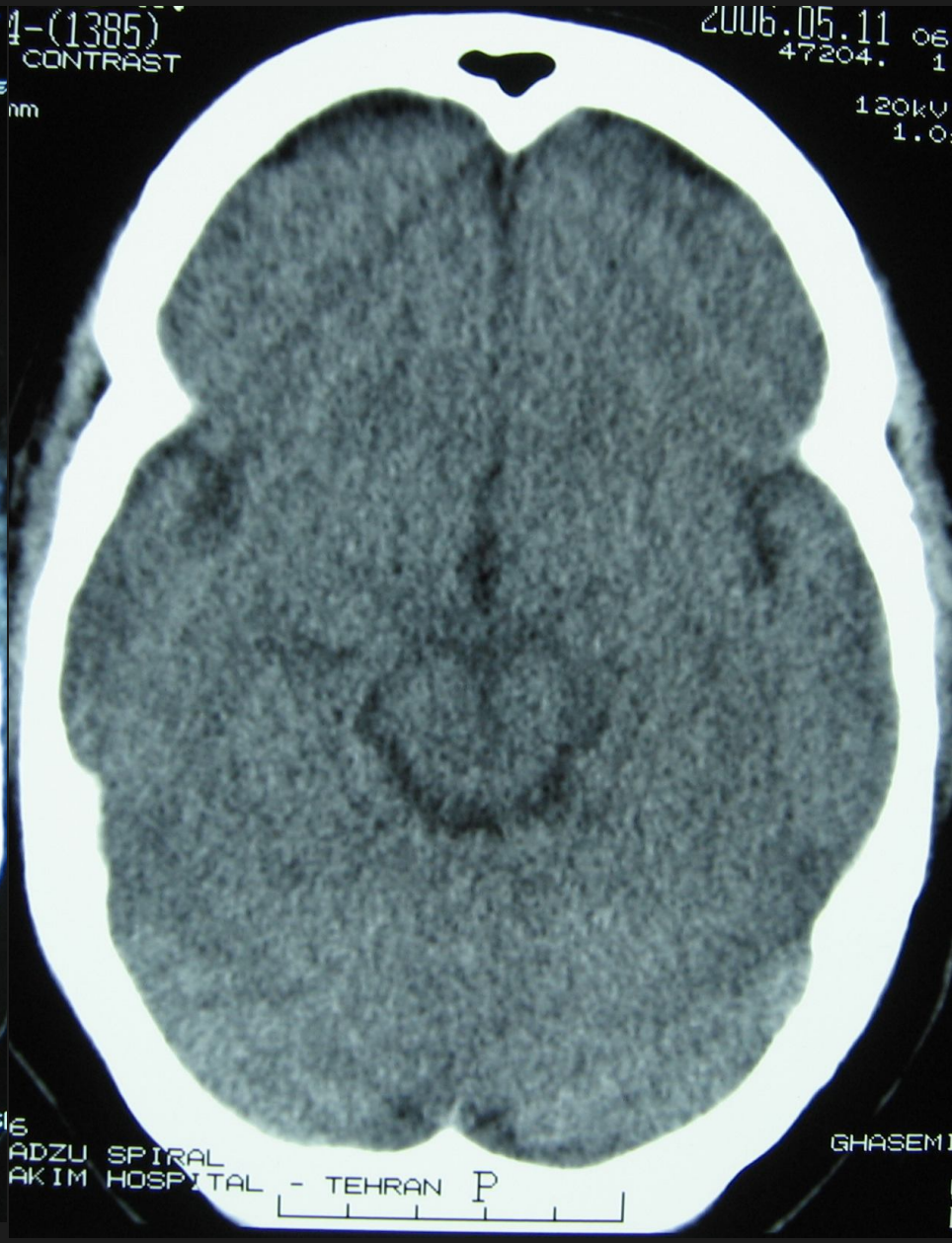
HAKIM HOSPITAL - TEHRAN P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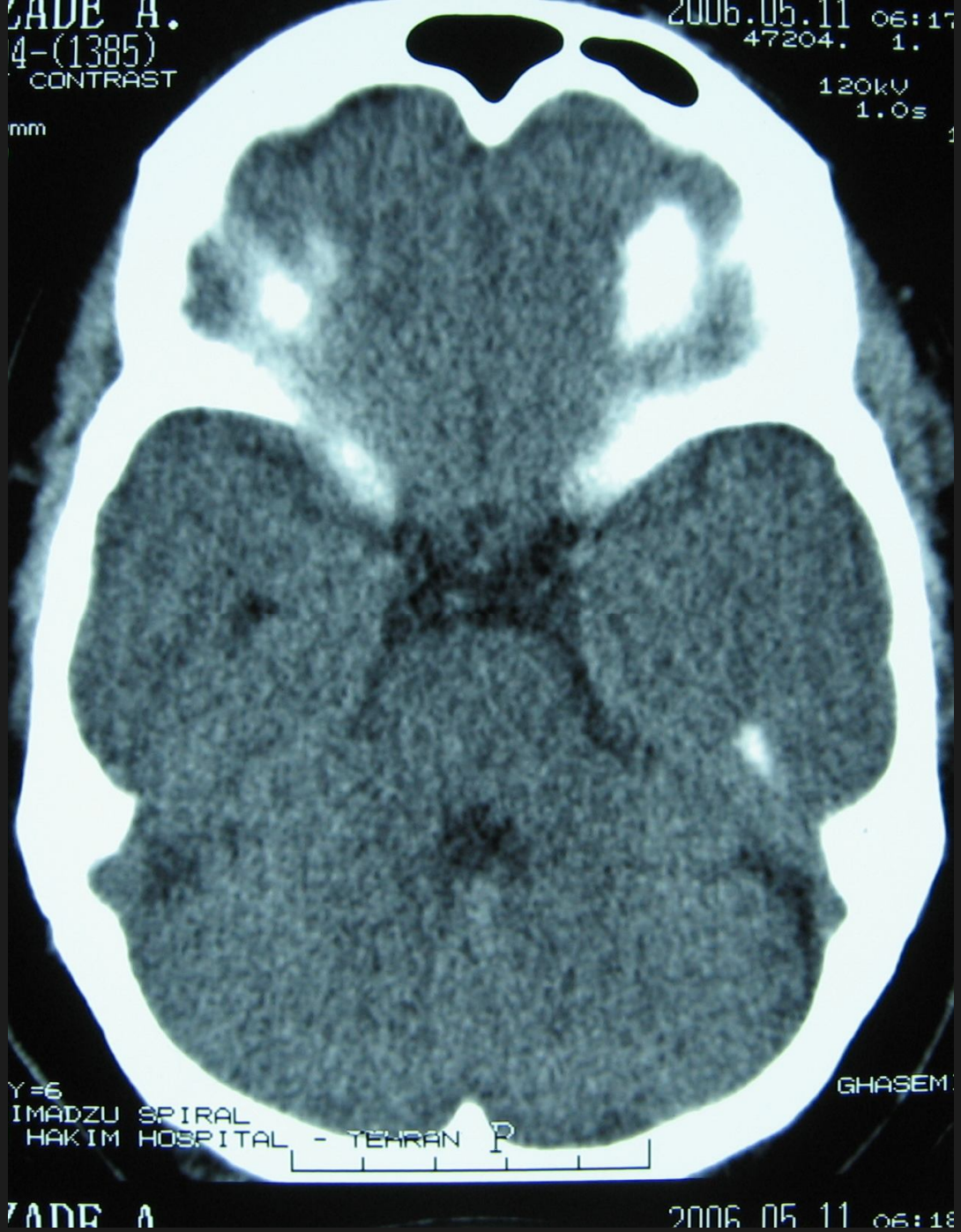
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HAKIM HOSPITAL - TEHRAN
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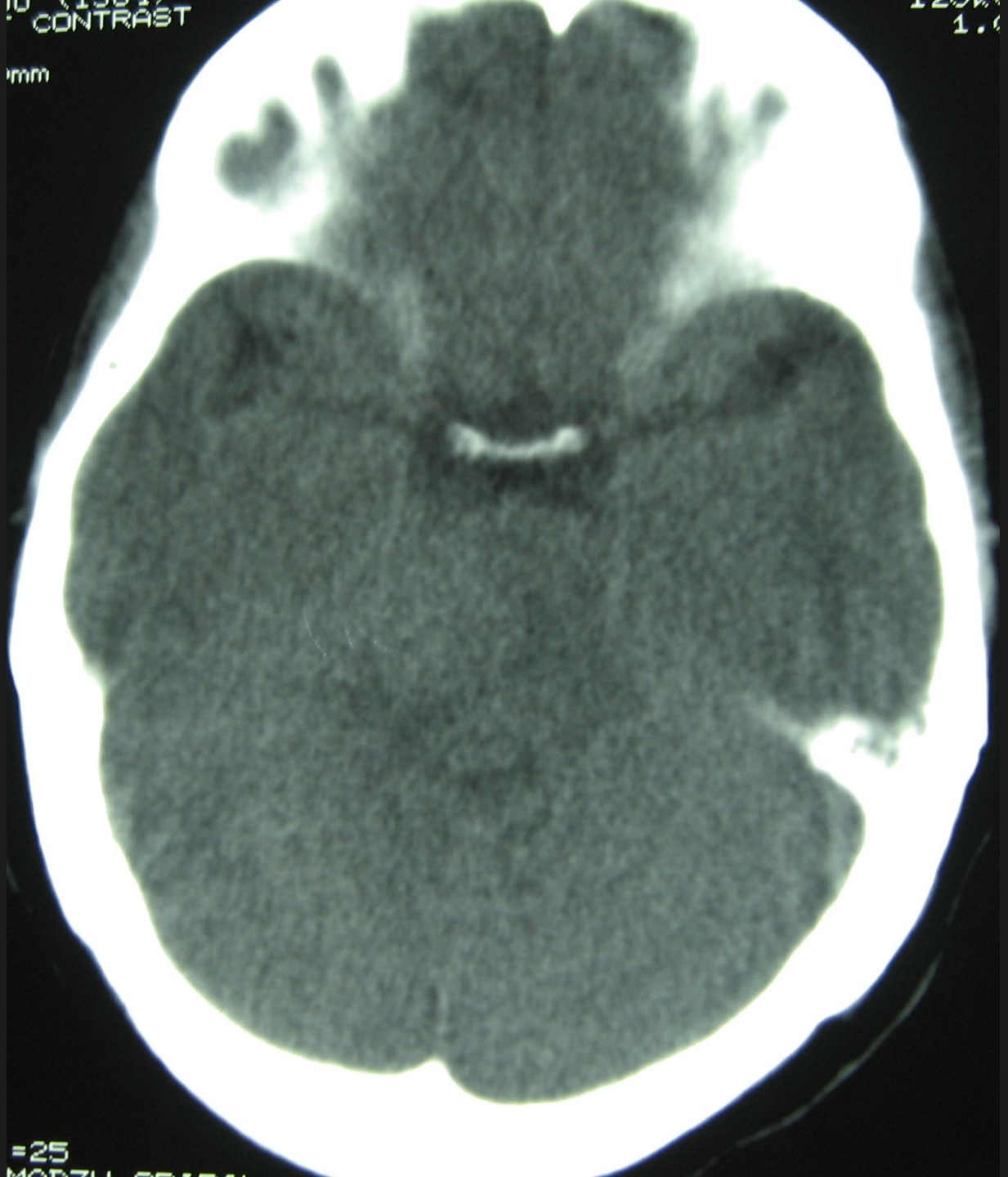
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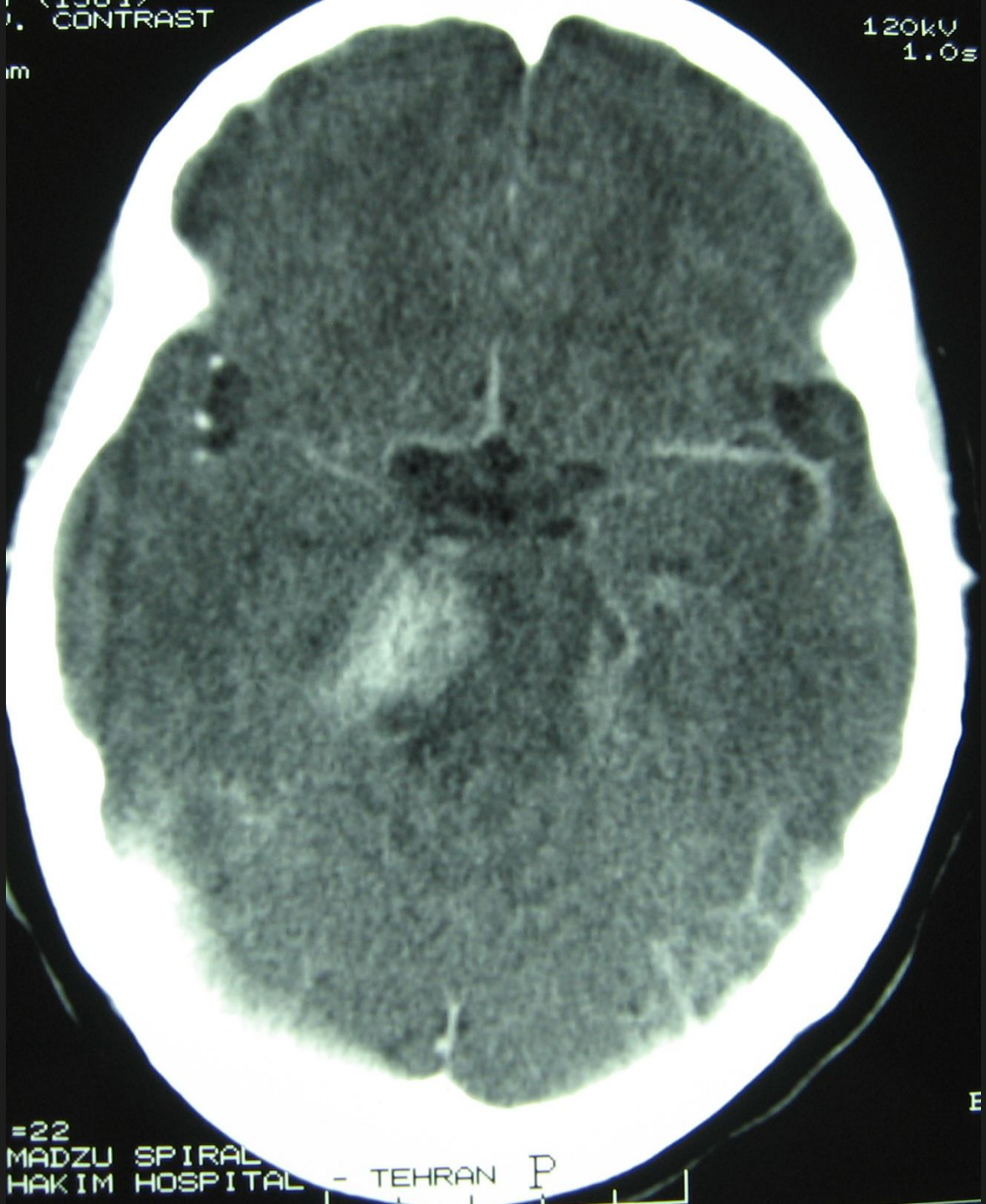
. CONTRAST
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MADZU SPIRAL
HAKIM HOSPITAL - TEHRAN

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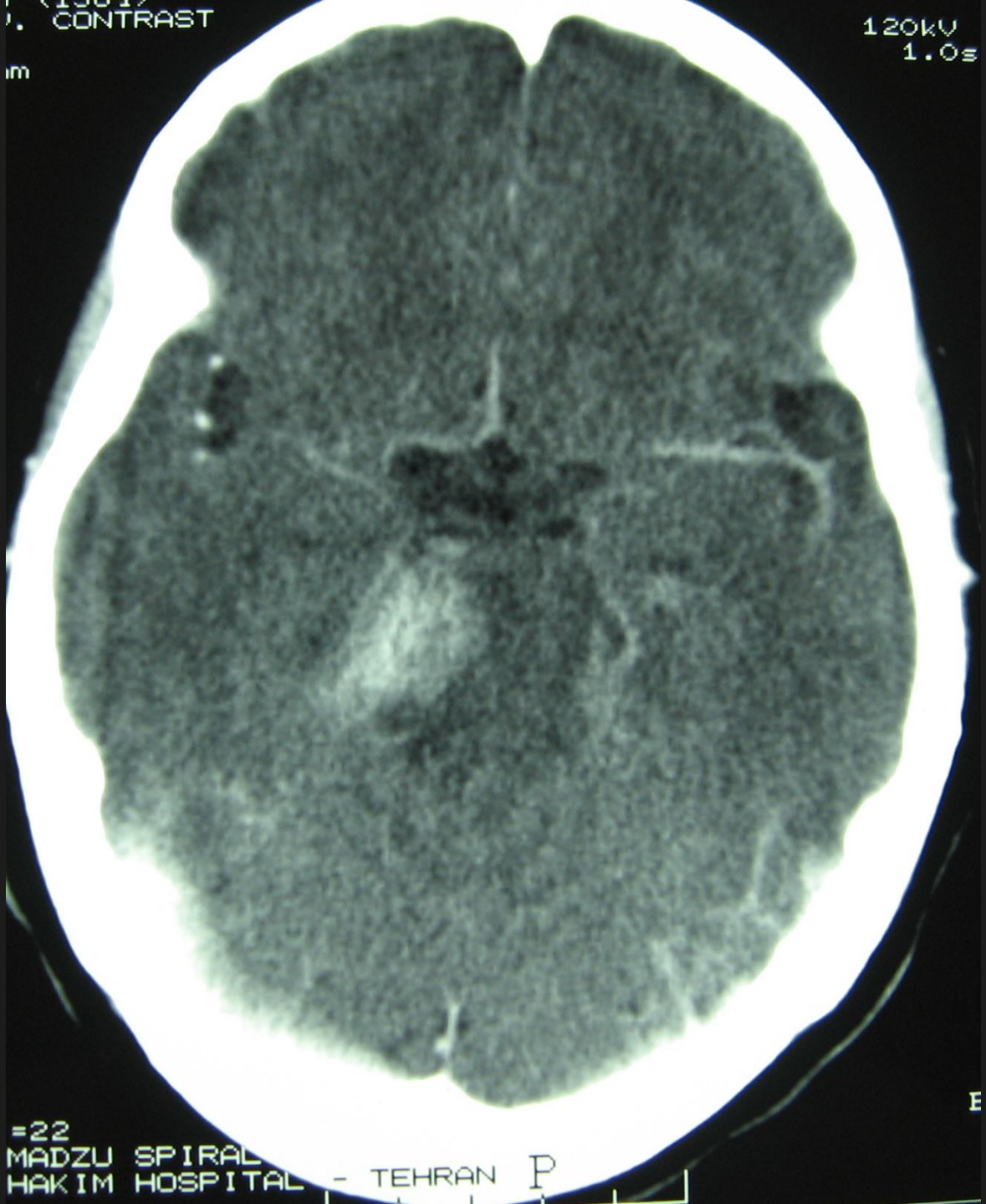
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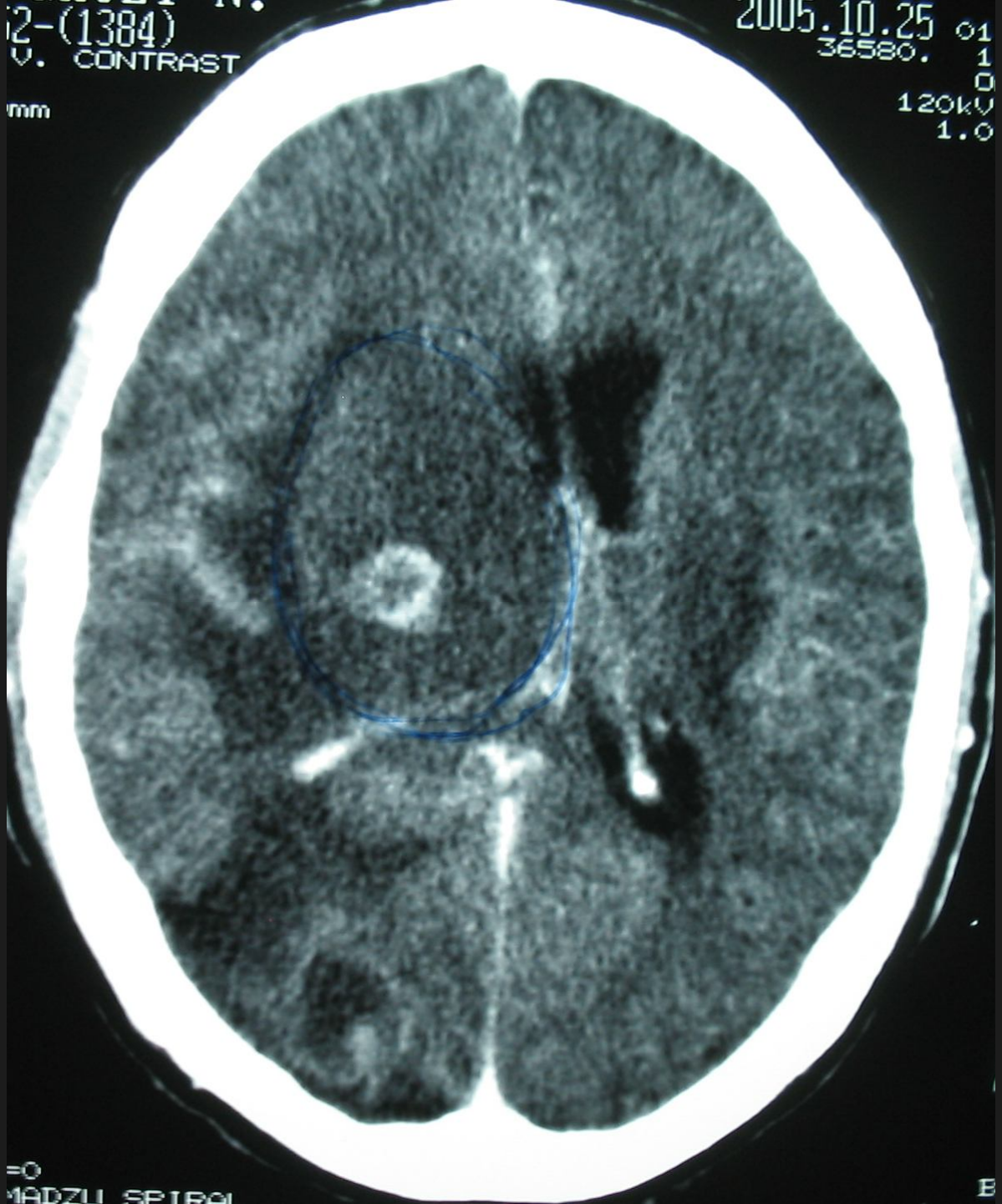
MADZU SPIRAL
HAKIM HOSPITAL - TEHRAN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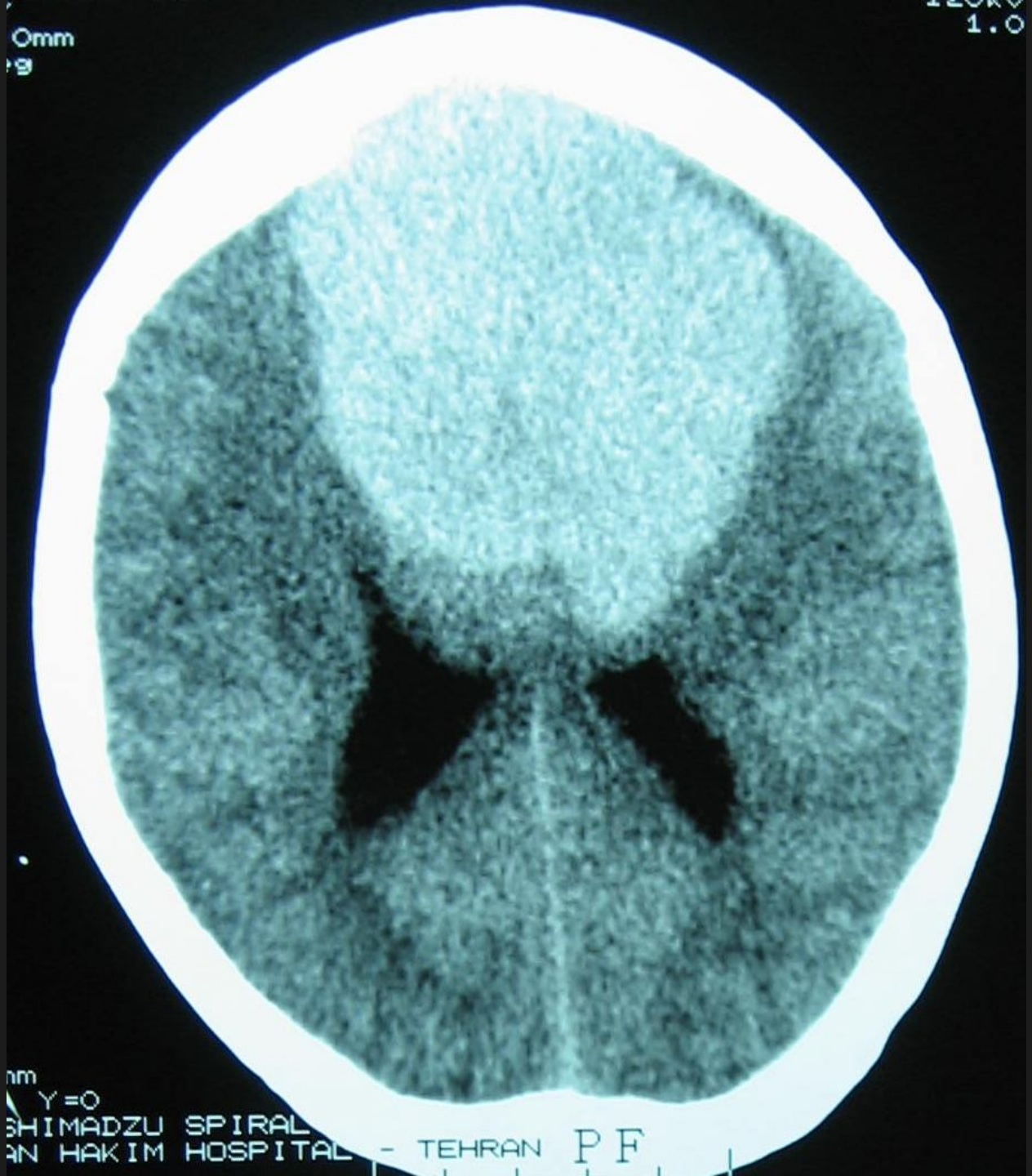
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SHIMADZU SPIRAL
AN HAKIM HOSPITAL - TEHRAN
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Z. KOHZAD
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ITHOUT CONTRAST
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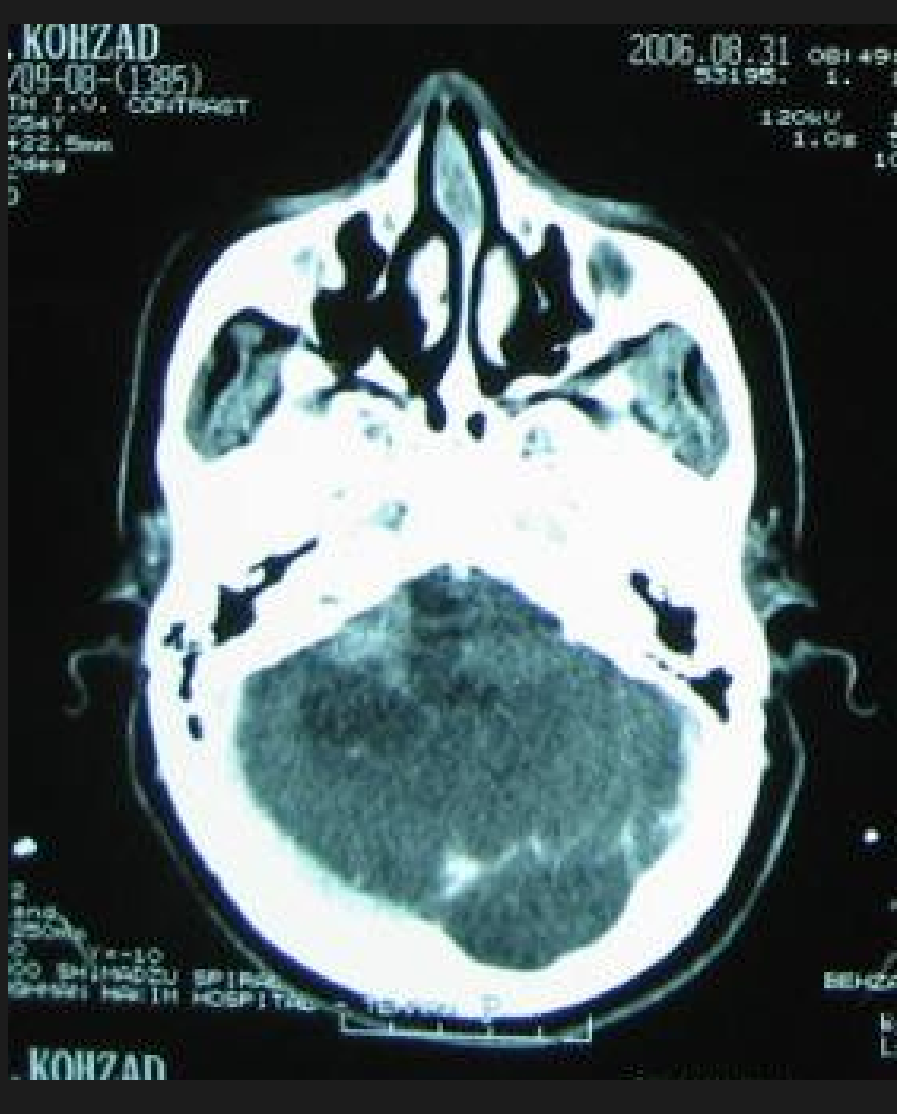
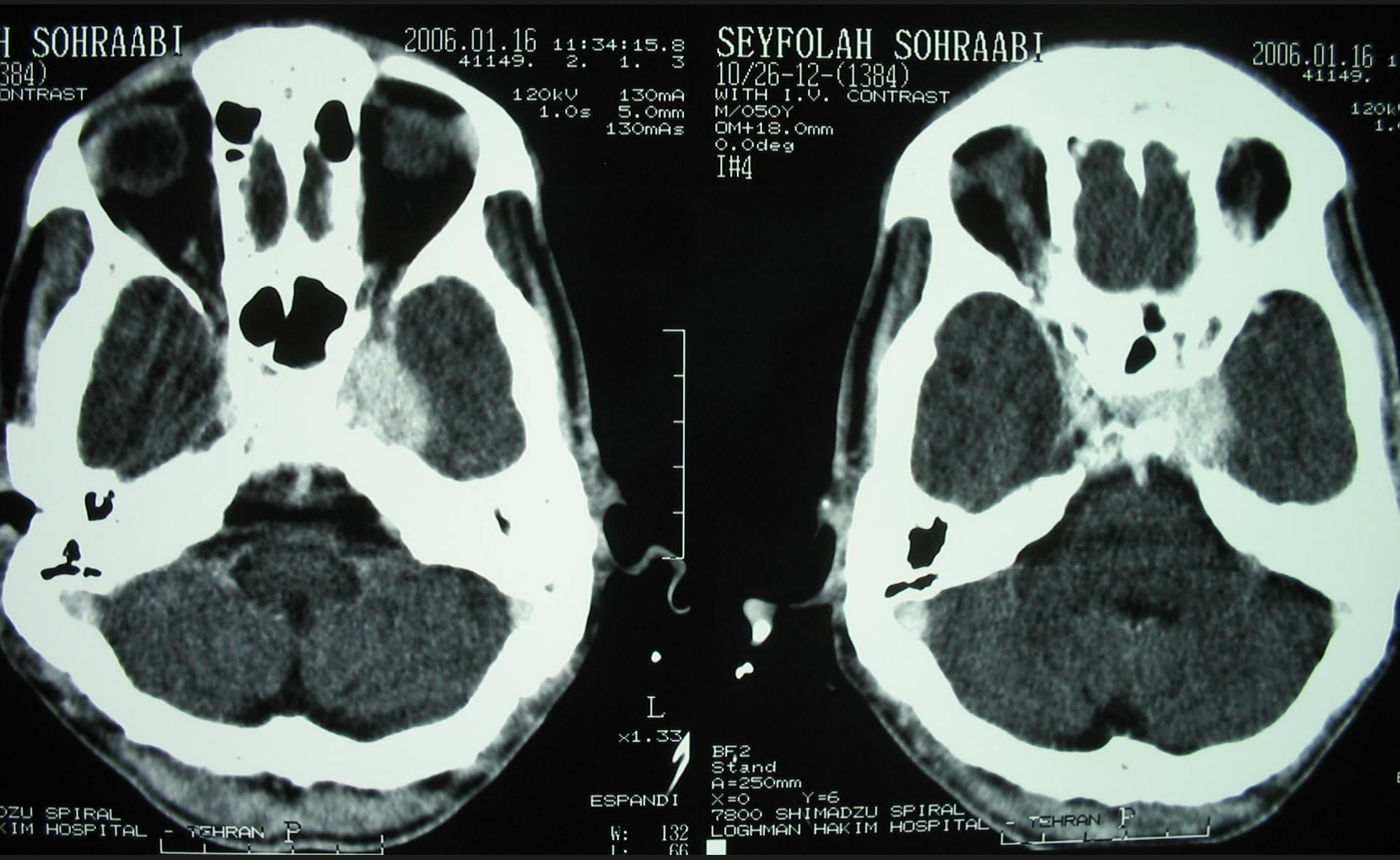
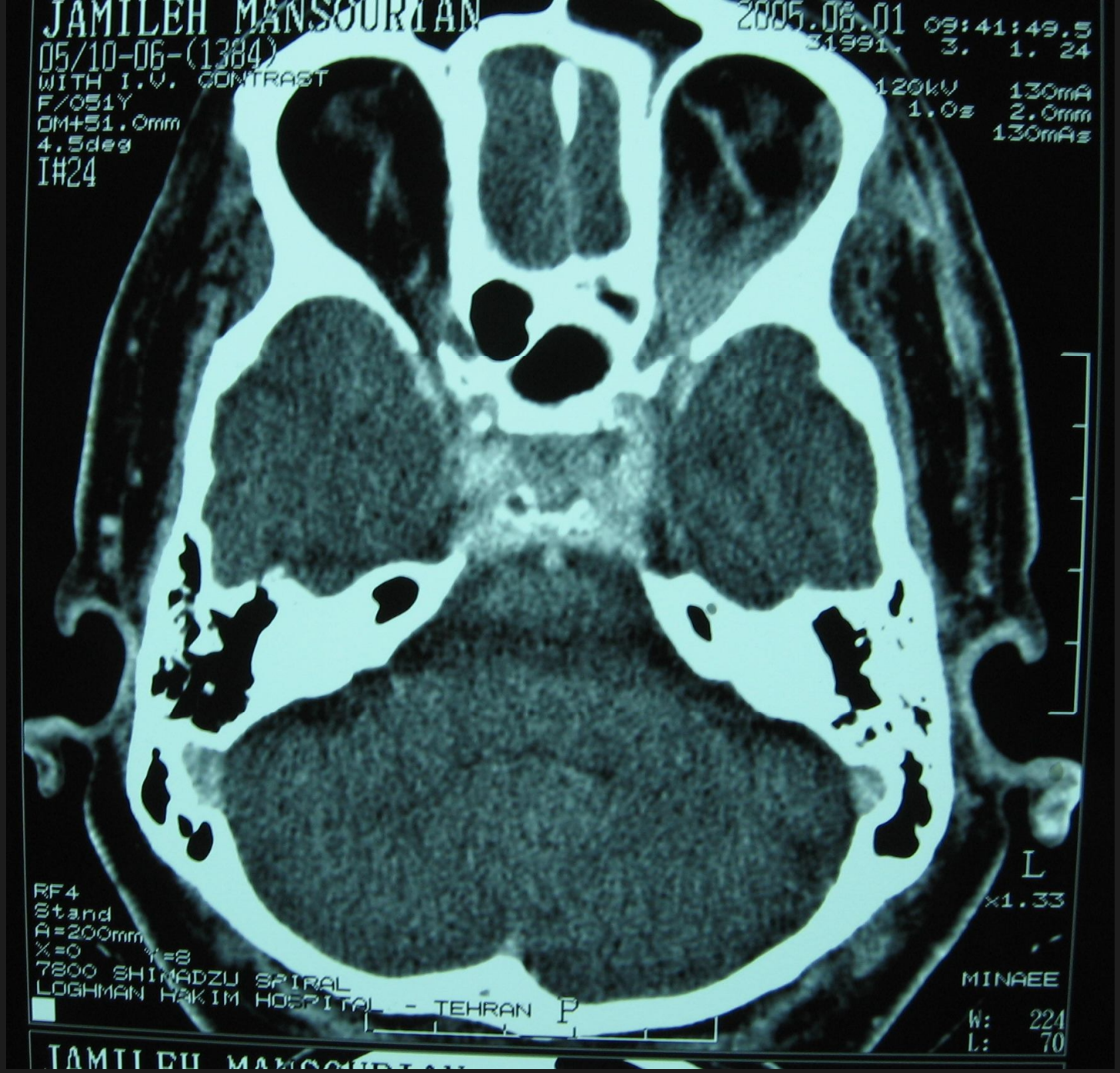

KOHZAD
2006.08.31
120kV


H SOHRAABI
384)
ONTRAST
2006.01.16 11:34:15.8
41149. 2. 1. 3
120kV 130mA
1.0s 5.0mm
130mAs
SEYFOLAH SOHRAABI
10/26-12-(1384)
WITH I.V. CONTRAST
M/050Y
0M+18.0mm
0.0deg
I#4
2006.01.16
41149.
L
x1.33
ESPANDI
W: 132
BF2
Stand
A=250mm
X=0 Y=6
7800 SHIMADZU SPIRAL
LOGHMAN HAKIM HOSPITAL - TEHRAN
OZU SPIRAL
KIM HOSPITAL - TEHRAN


JAMILEH MANSOURIAN
2005.06.01 09:41:49.5
31991. 3. 1. 24
05/10-06-(1384)
WITH I.V. CONTRAST
F/051Y
OM+51.0mm
4.5deg
I#24
120kV 130mA
1.0s 2.0mm
130mAs
RF4
Stand
A=200mm
X=0 Y=8
7800 SHIMADZU SPIRAL
LOGHMAN HAKIM HOSPITAL - TEHRAN
L
×1.33
MINAEE
W: 224
L: 70

Checklist for reading cranial CT

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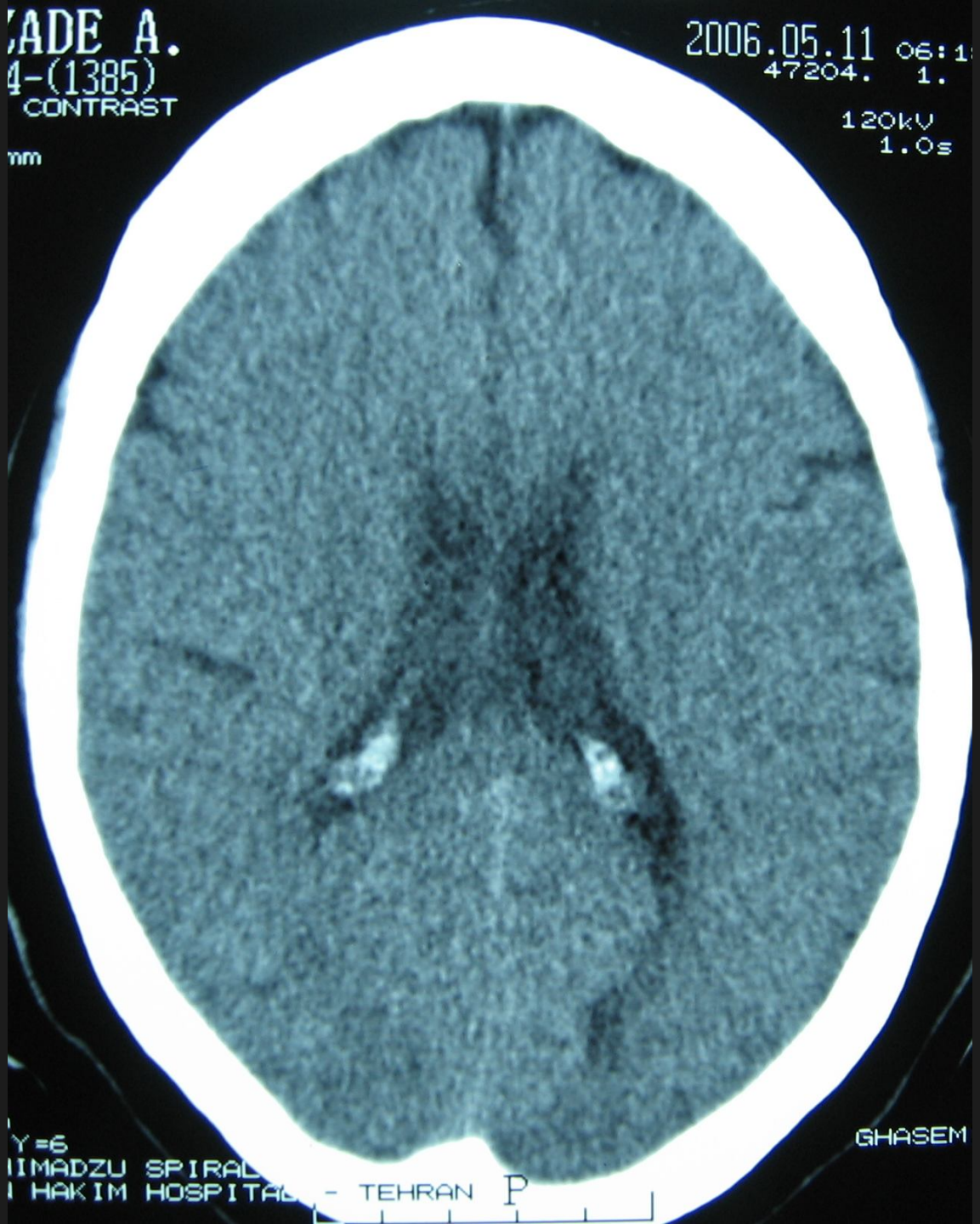
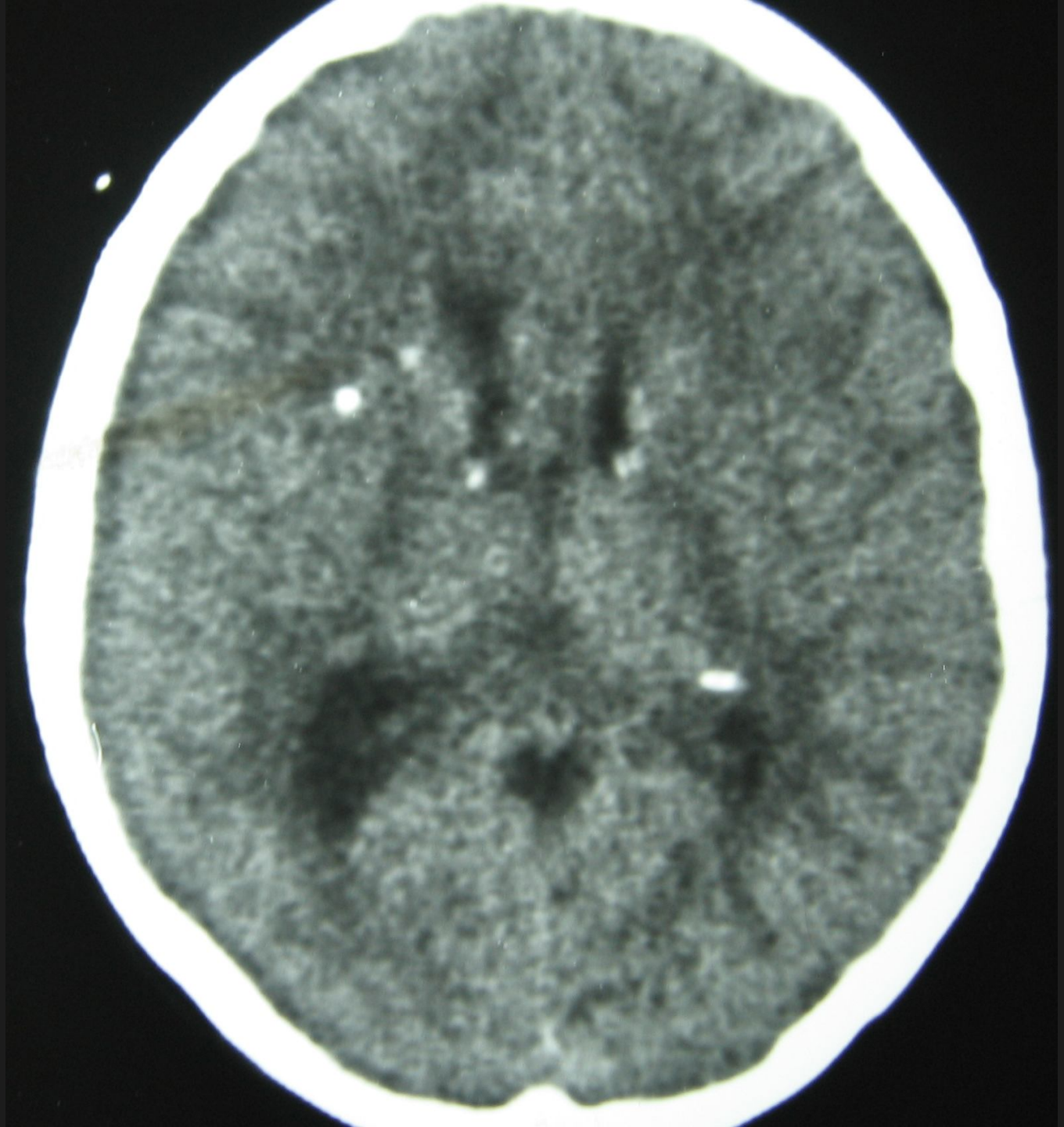
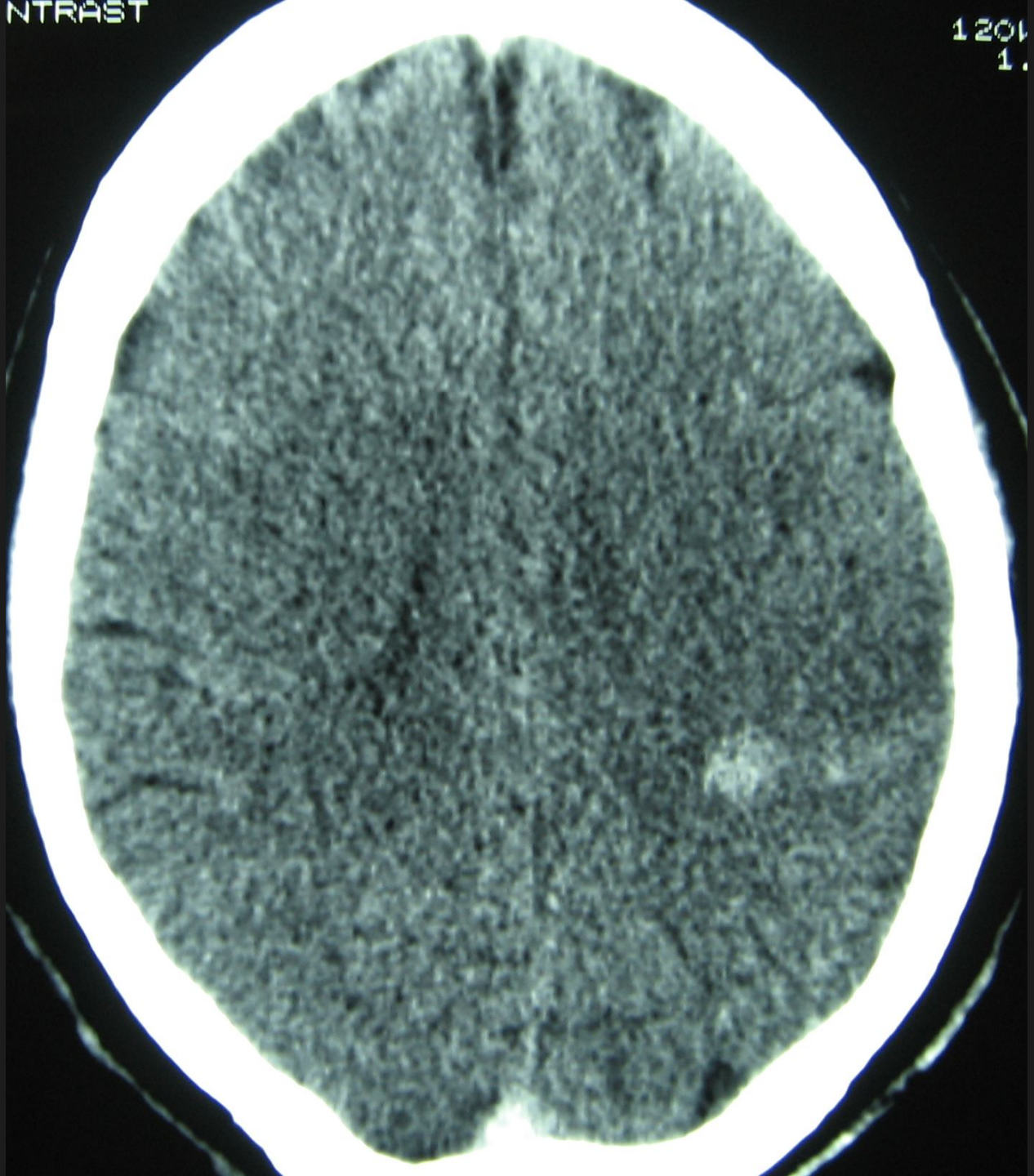
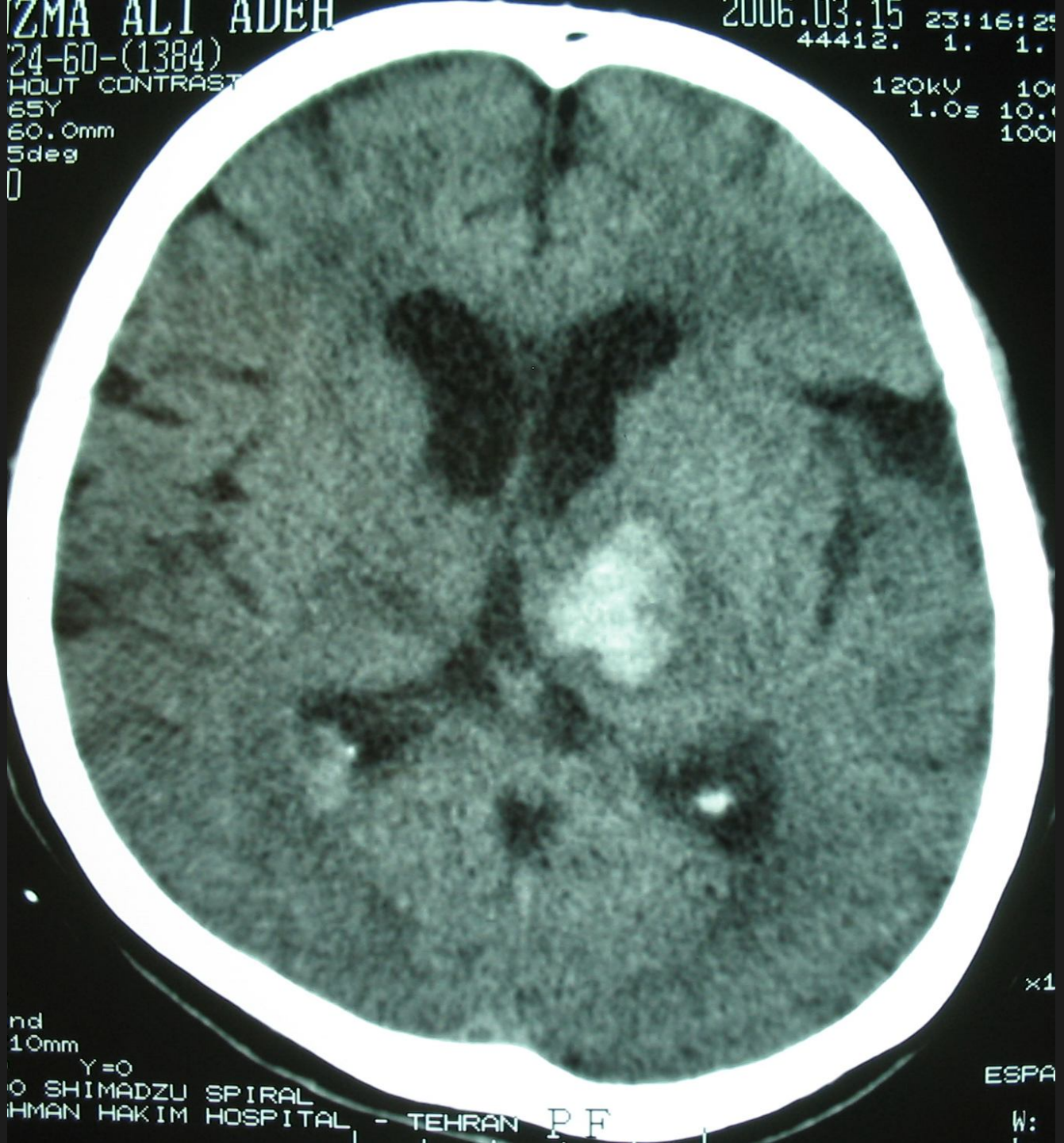
- BG, Internal capsule, Brainstems, cerebellum for infarction.
- Focal lesion or edema around paraventricular and paracortical white matter.


ZADE A.
4-(1385)
CONTRAST
mm
2006.05.11 06:1
47204. 1.
120kV
1.0s
Y=6
IIMADZU SPIRAL
I HAKIM HOSPITAL - TEHRAN
GHASEM




NTRAST


ZMA ALI ADEH
2006.03.15 23:16:25
44412. 1. 1.
24-60-(1384)
HOUT CONTRAST
65Y
60.0mm
5deg
120kV
1.0s
nd
10mm
Y=0
O SHIMADZU SPIRAL
HMAN HAKIM HOSPITAL - TEHRAN
ESPA
W:


VAJDI NEZHAD R.
08/24-27-(1384)
WITHOUT CONTRAST
F/054Y
OM+60.0mm
1.5deg
I#10
2005.11.15 15:42:
37756. 1.
120kV
1.0s
BF2
Stand
A=250mm
X=0 Y=0
7800 SHIMADZU SPIRAL
LOGHMAN HAKIM HOSPITAL - TEHRAN

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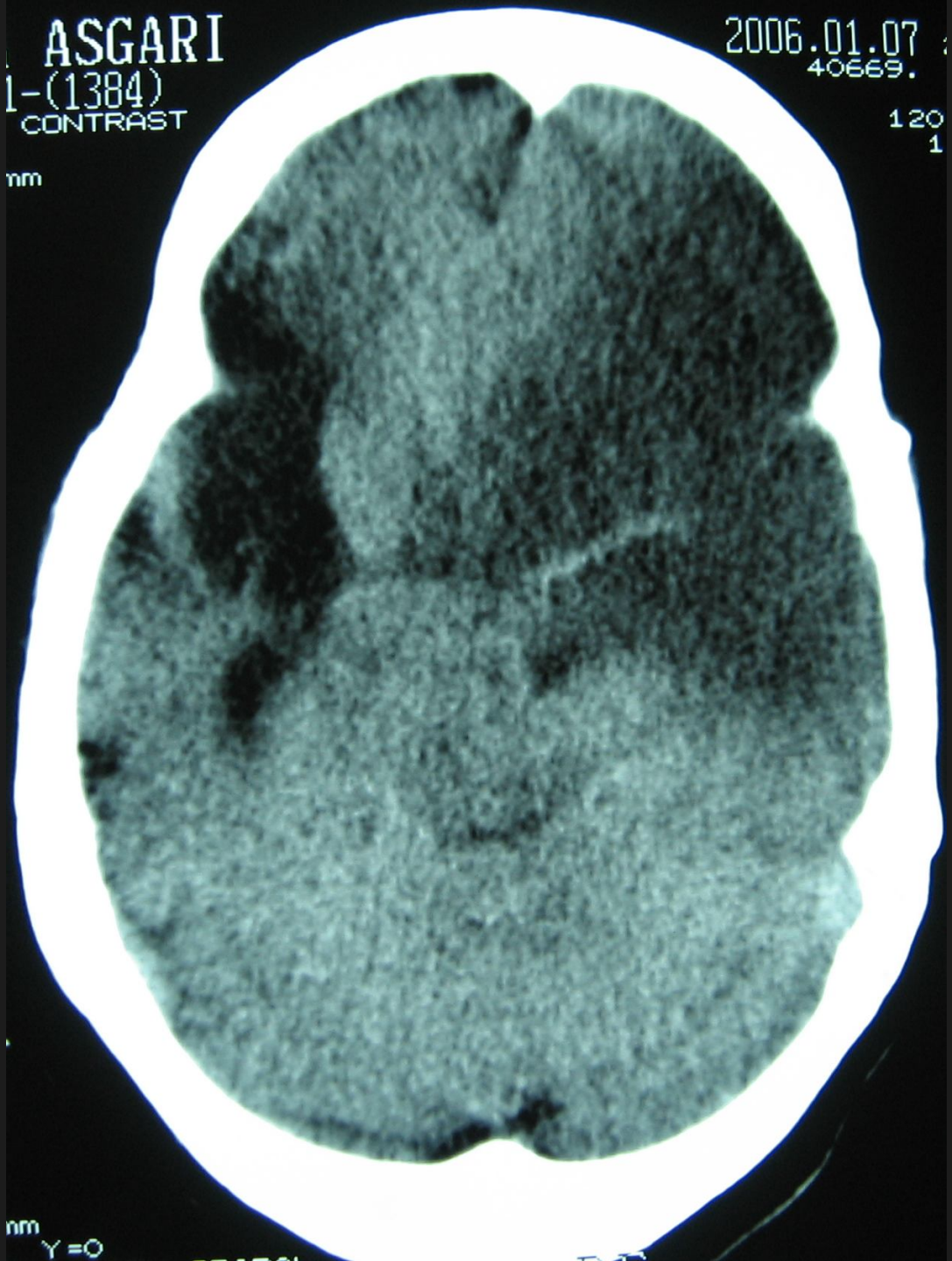
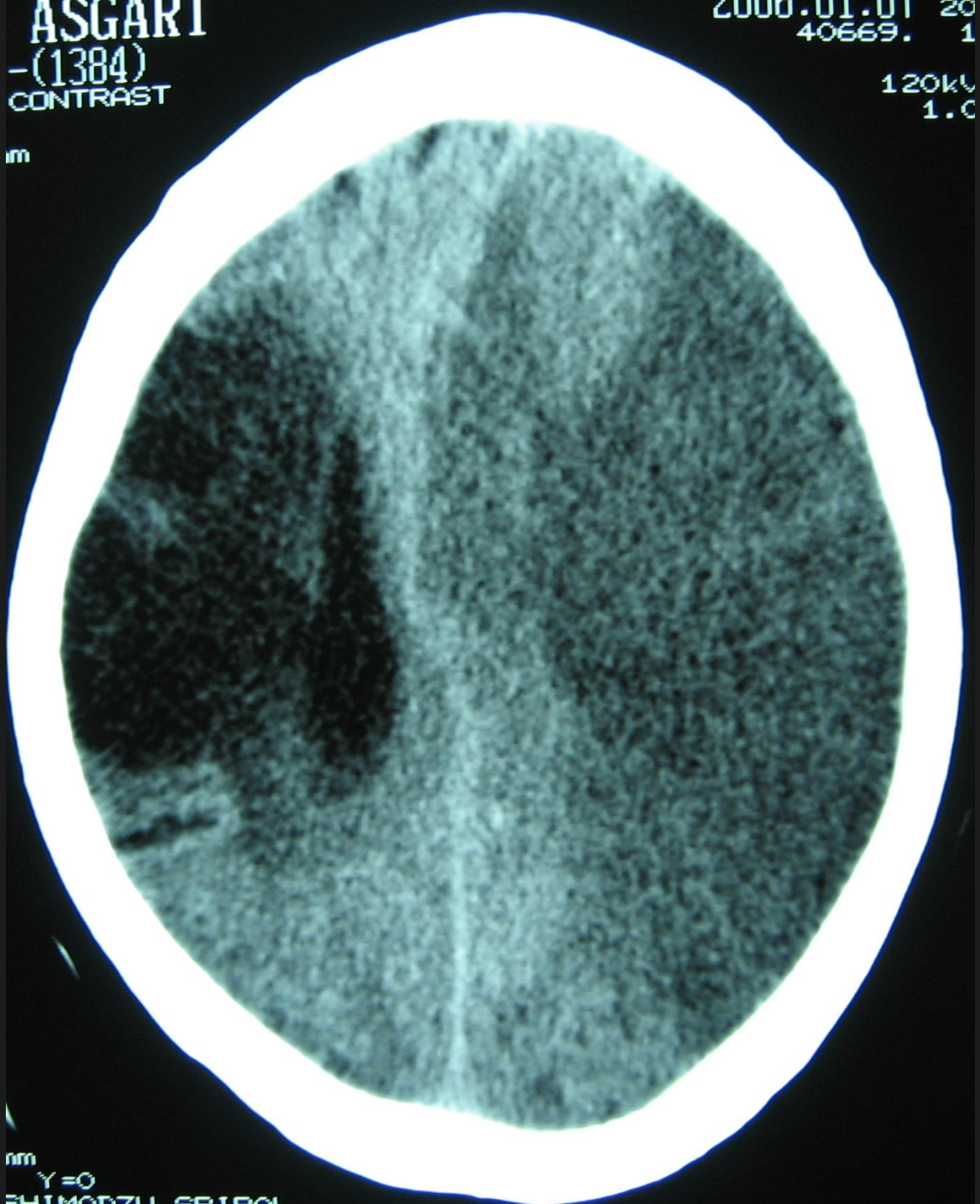
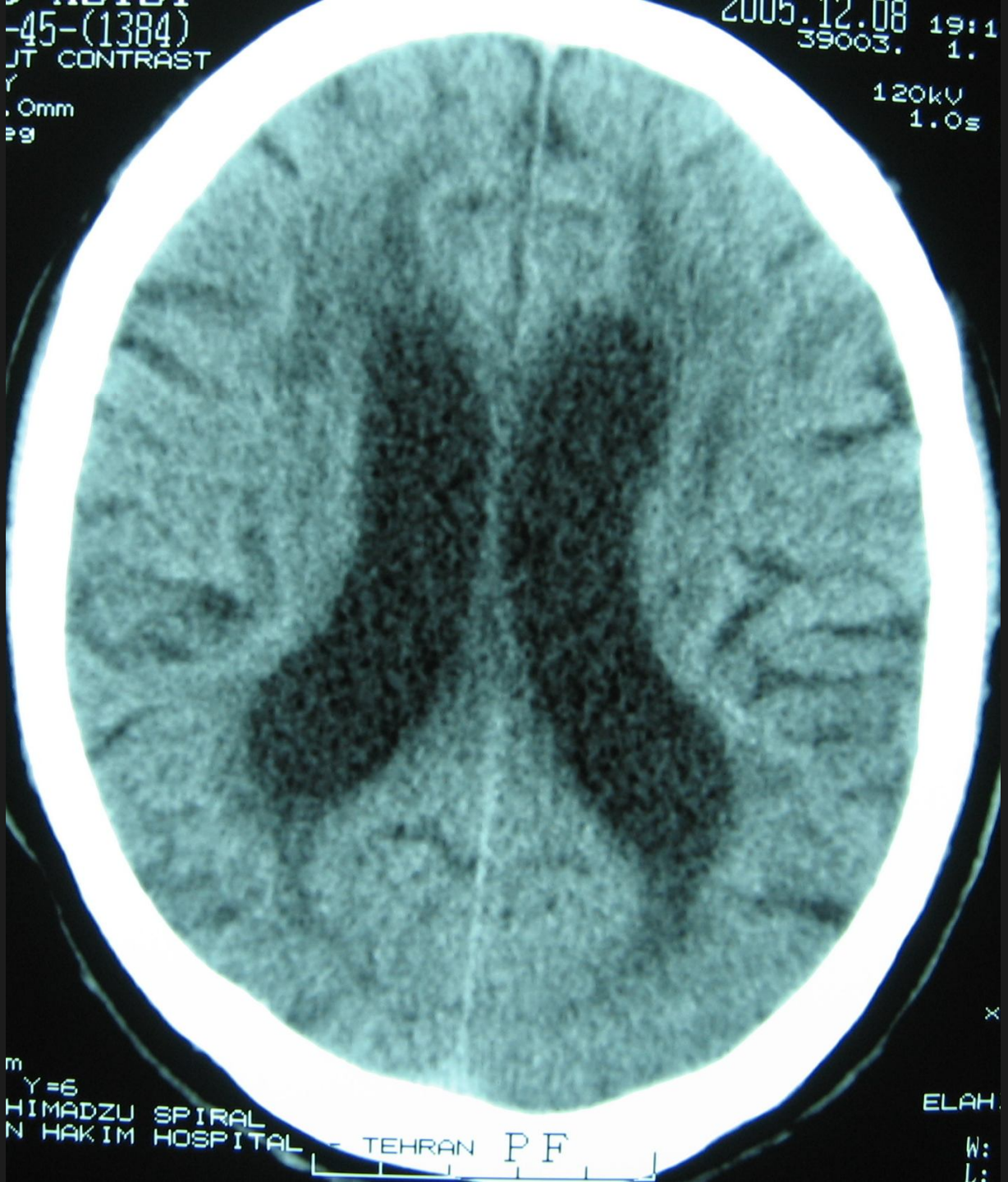
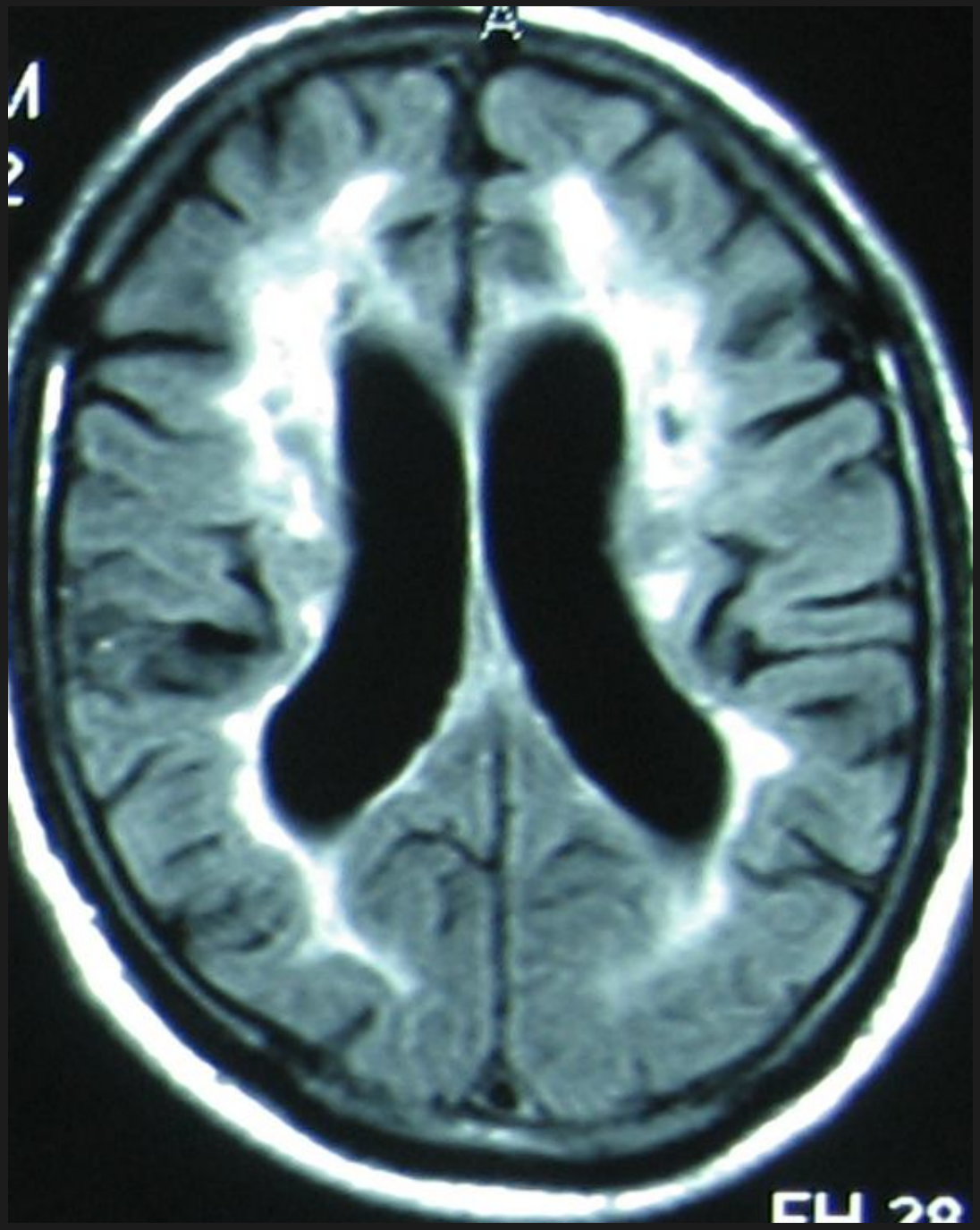

ASGARI
1-(1384)
CONTRAST
2006.01.07
40669.
120
1
mm
mm
Y=0


ASGARI
-(1384)
CONTRAST
40669.
120kV
Y=0


BAS AZIZI
/17-45-(1384)
THOUT CONTRAST
046Y
25.0mm
5deg
2005.12.08 19:19:3
39003. 1. 1.
120kV 13
1.0s 5.
130
L:
x1
3mm
Y=6
SHIMADZU SPIRAL
MAN HAKIM HOSPITAL - TEHRAN
ELAHI


-45-(1384)
UT CONTRAST
.0mm
eg
2005.12.08 19:1
39003. 1.
120kV
1.0s
m
Y=6
HIMADZU SPIRAL
N HAKIM HOSPITAL
TEHRAN
ELAH
W:


A

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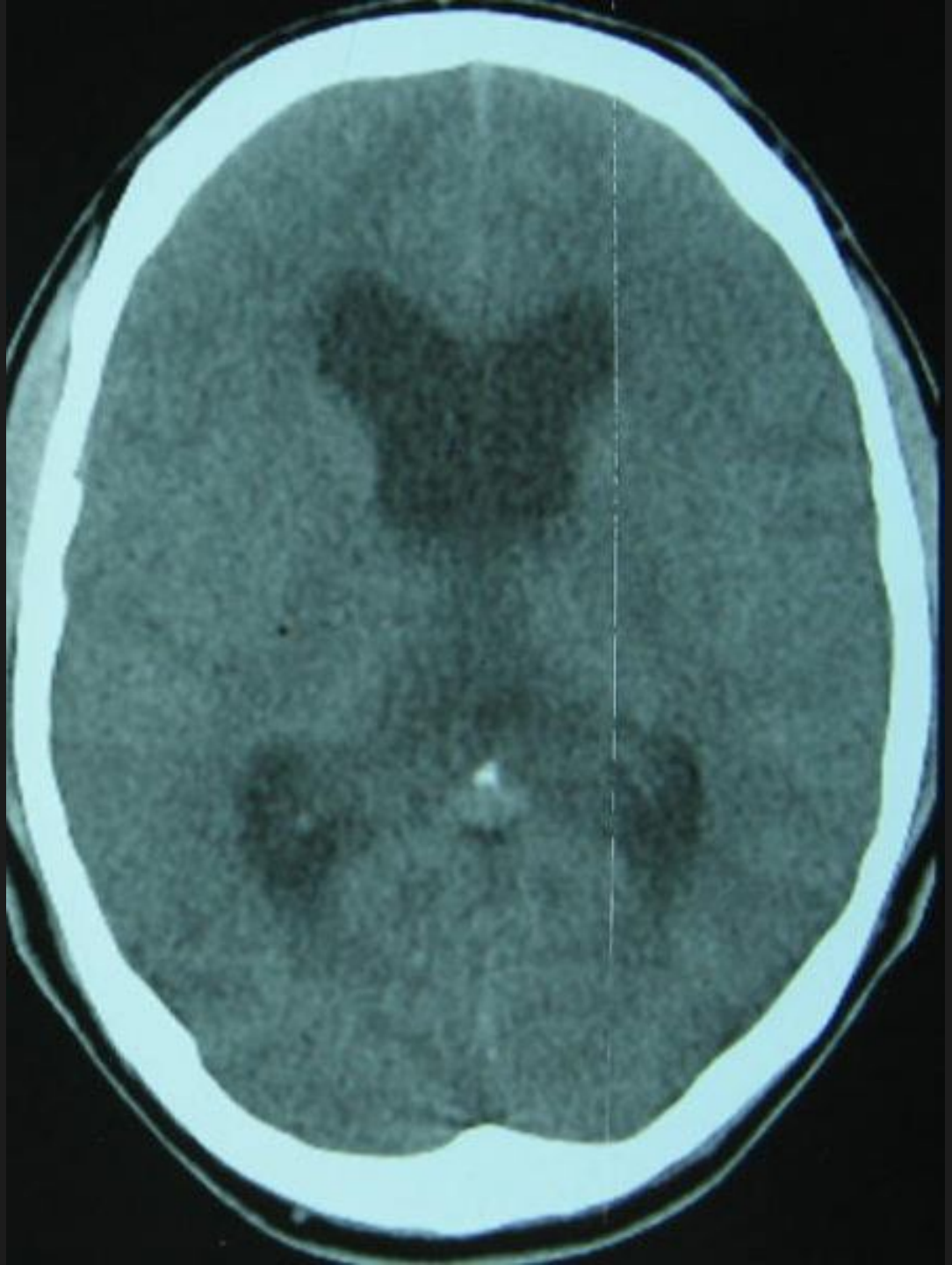
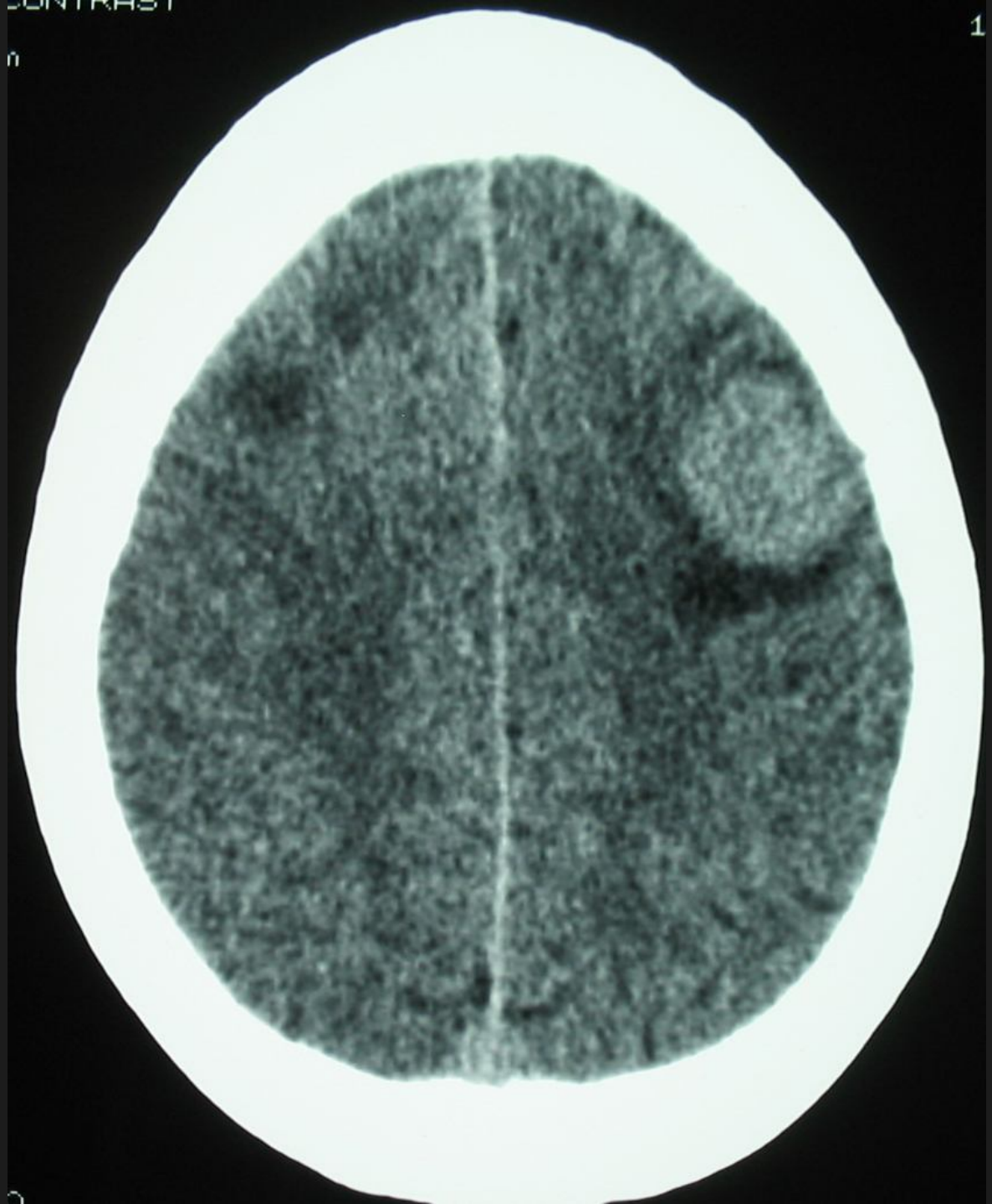
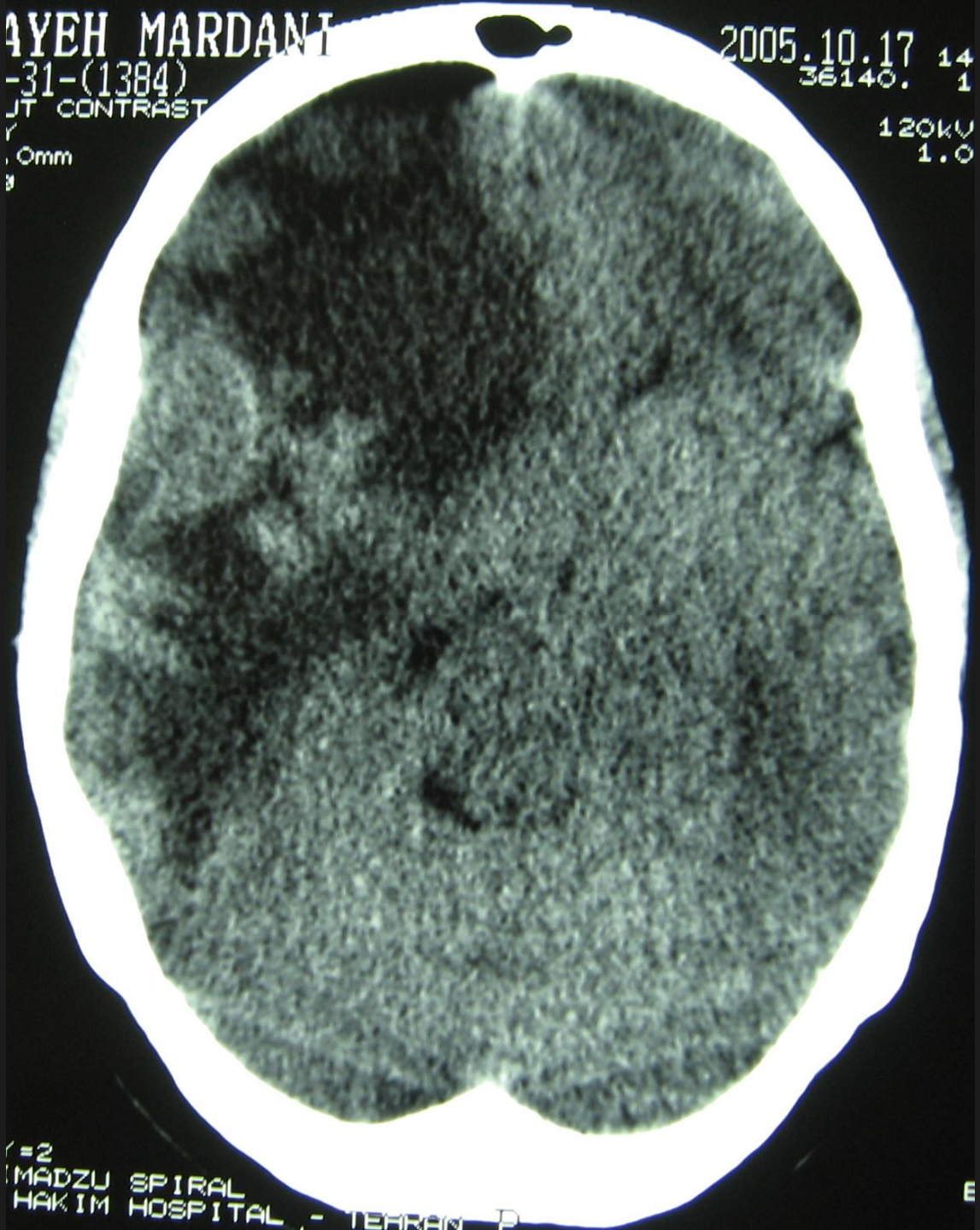



CONTRAST
1


AYEH MARDANI
-31-(1384)
UT CONTRAST
0mm
2005.10.17 14
36140. 1
120kV
1.0
=2
MADZU SPIRAL
HAKIM HOSPITAL


BIBI
-26-(1384)
T CONTRAST
0mm
35271. 1.
120kV
1.0s
=-1
MADZU SPIRAL
HAKIM HOSPITAL - TEHRAN P