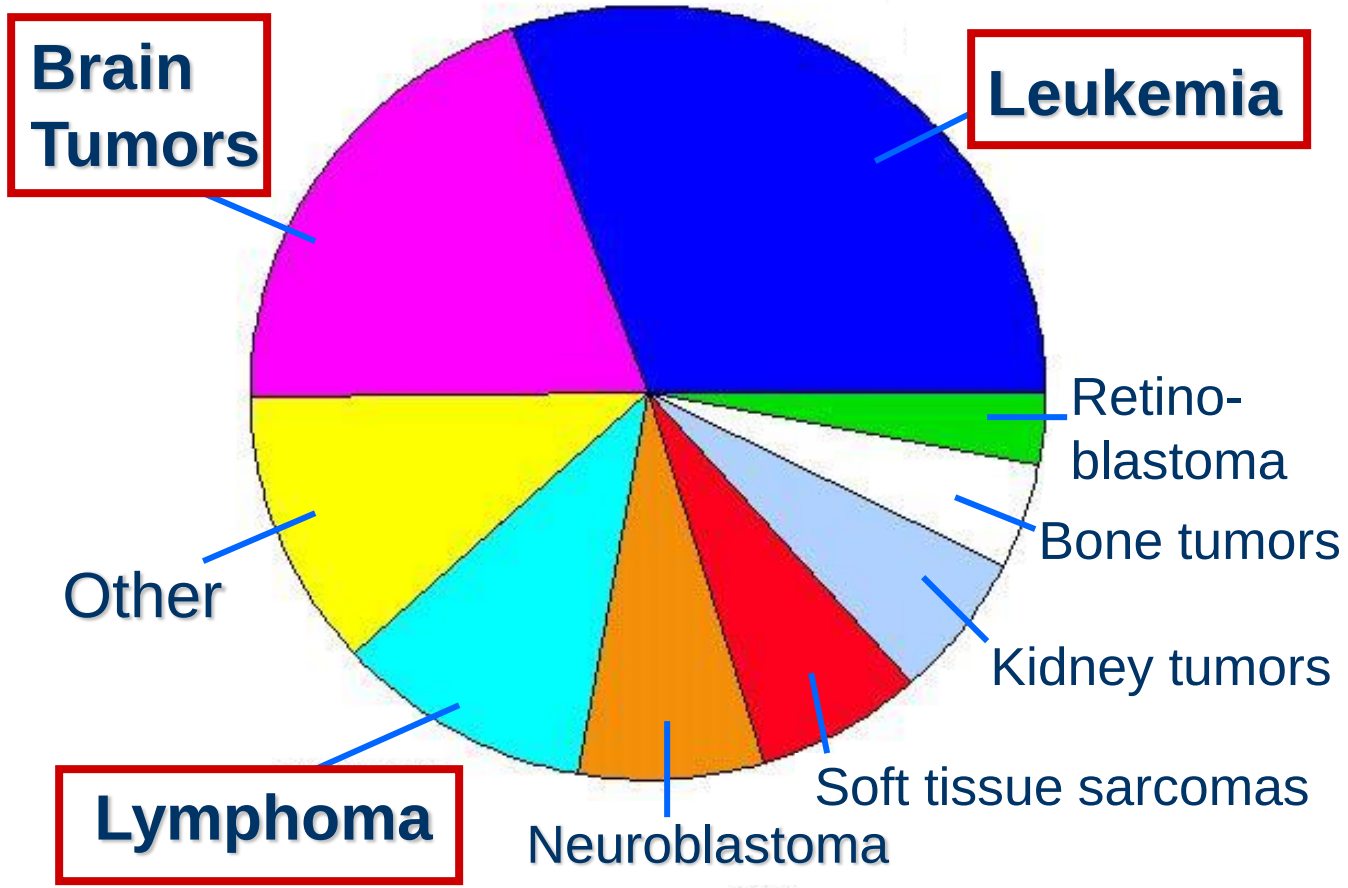
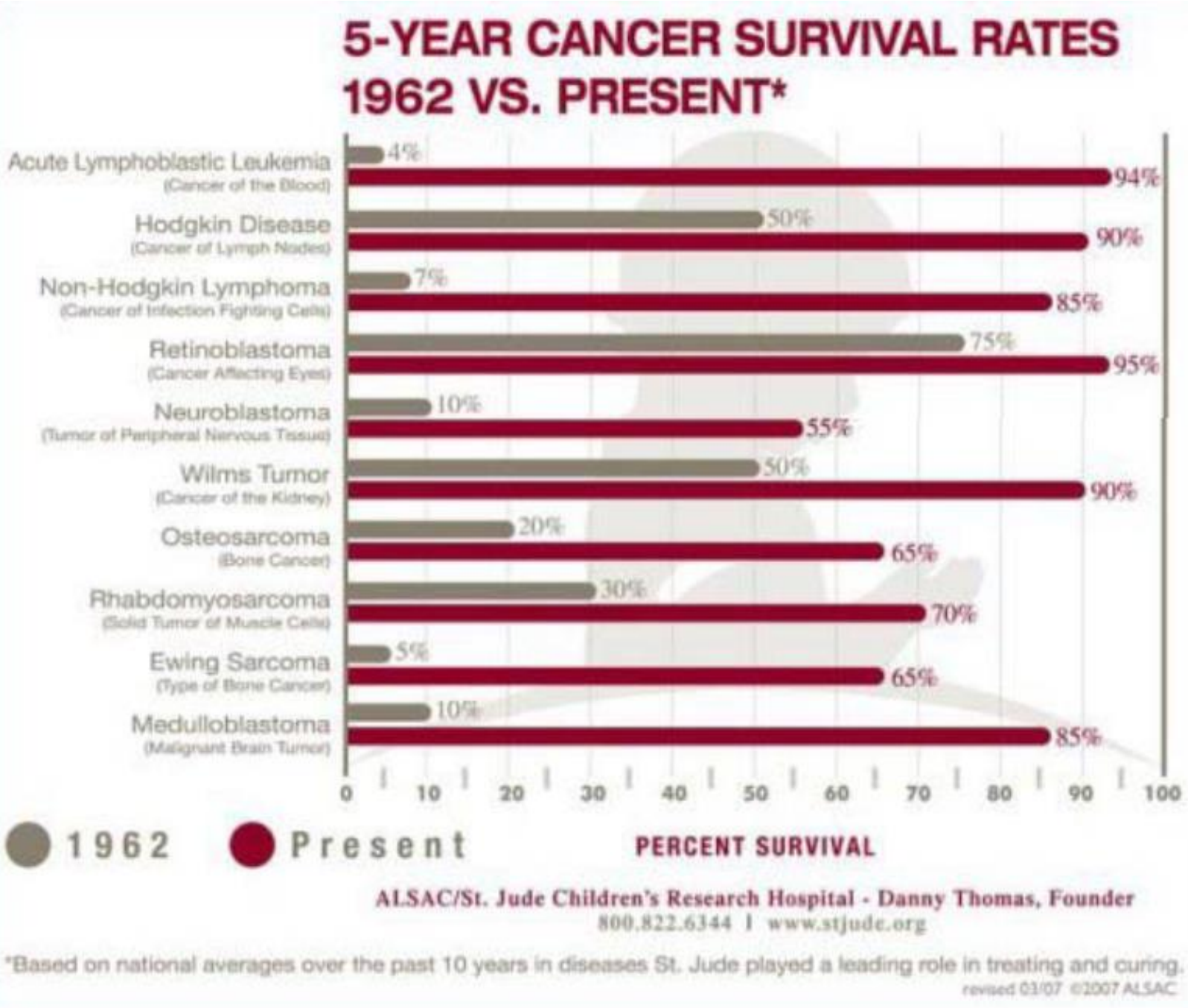
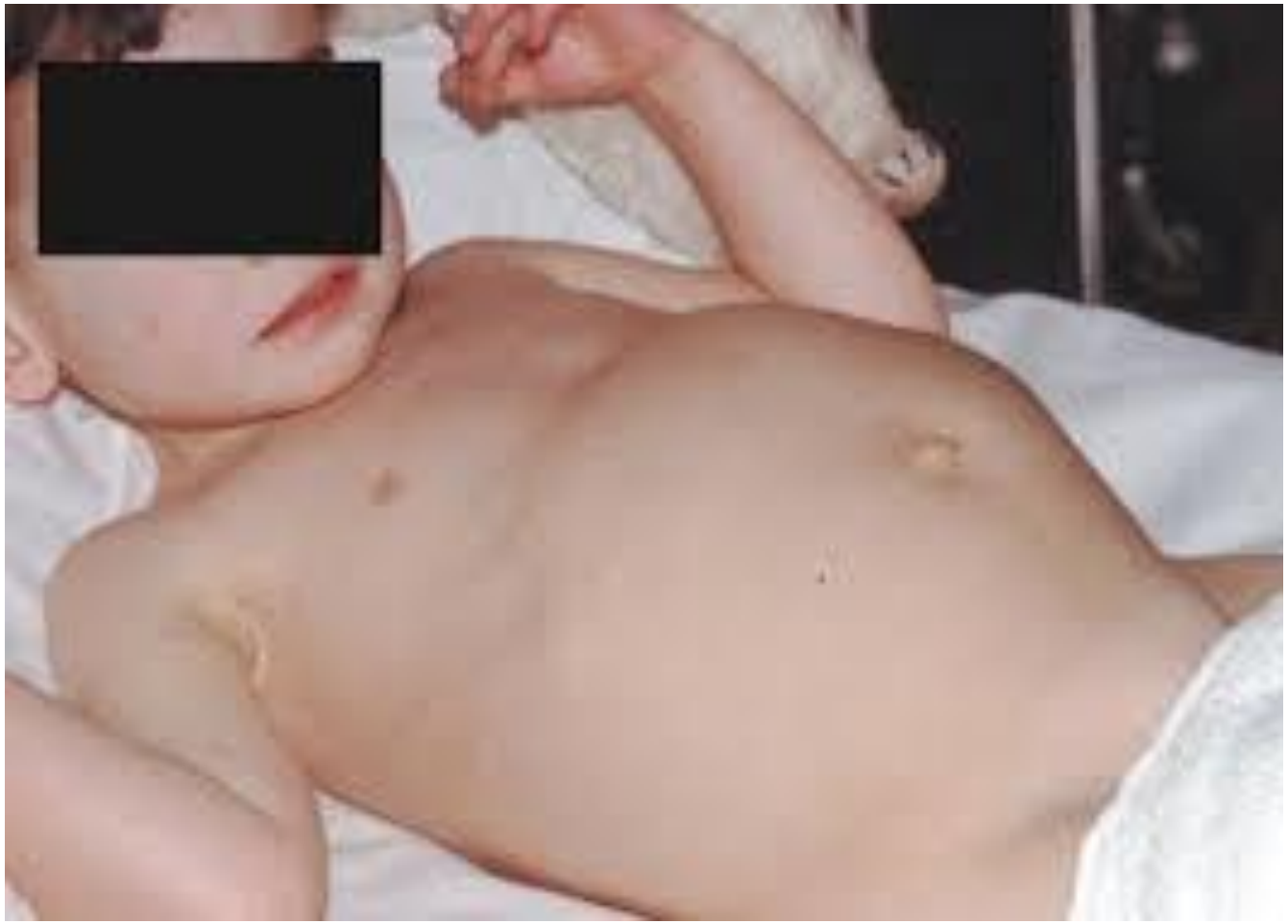
Approach to Abdominal masses

Childhood Cancers

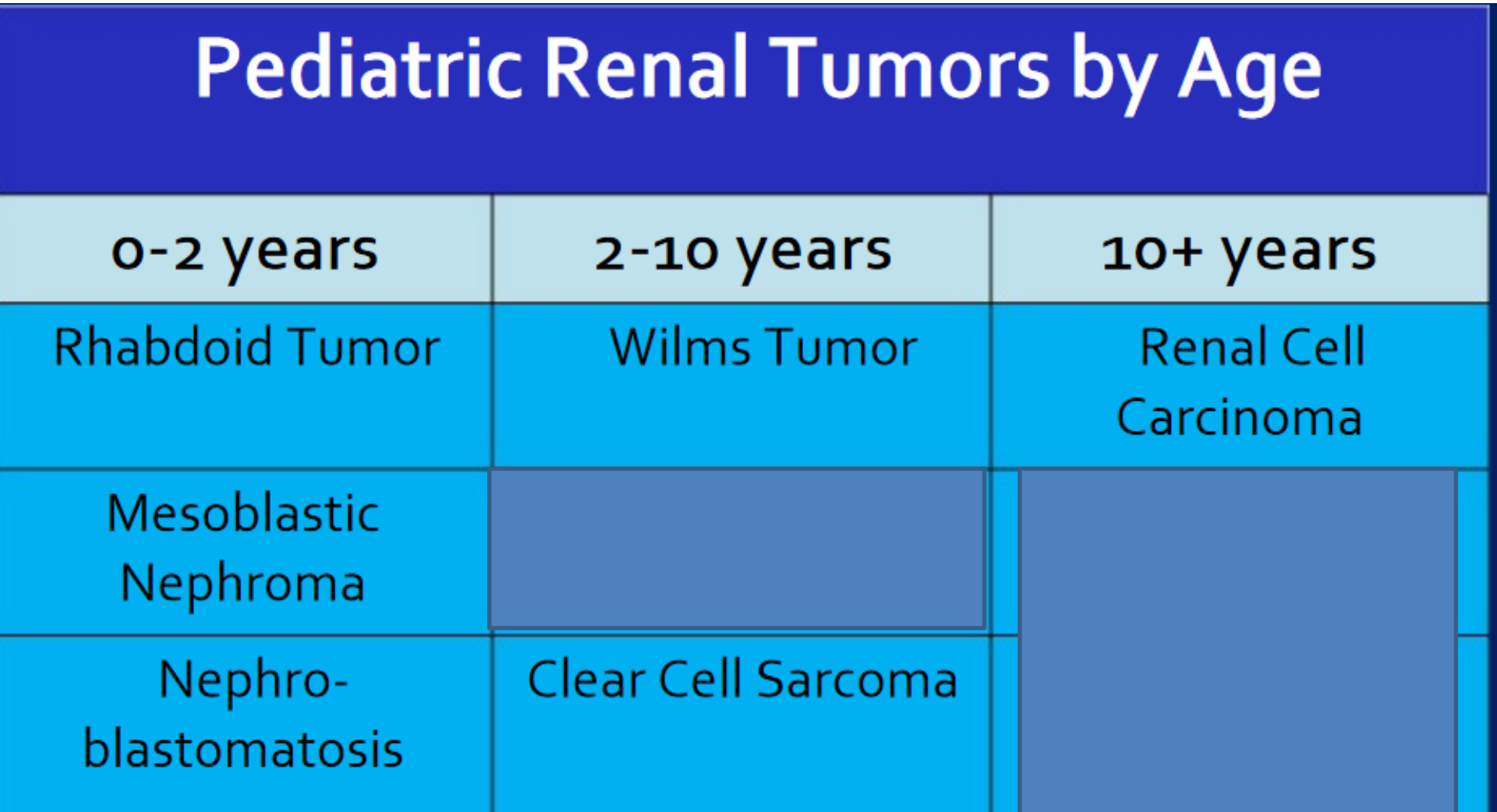



5-YEAR CANCER SURVIVAL RATES
1962 VS. PRESENT*
Acute Lymphoblastic Leukemia
(Cancer of the Blood)
4%
94%
Hodgkin Disease
(Cancer of Lymph Nodes)
50%
90%
Non-Hodgkin Lymphoma
(Cancer of Infection Fighting Cells)
7%
85%
Retinoblastoma
(Cancer Affecting Eyes)
75%
95%
Neuroblastoma
(Tumor of Peripheral Nervous Tissue)
10%
55%
Wilms Tumor
(Cancer of the Kidney)
50%
90%
Osteosarcoma
(Bone Cancer)
20%
65%
Rhabdomyosarcoma
(Solid Tumor of Muscle Cells)
30%
70%
Ewing Sarcoma
(Type of Bone Cancer)
5%
65%
Medulloblastoma
(Malignant Brain Tumor)
10%
85%
0 10 20 30 40 50 60 70 80 90 100
1962
Present
PERCENT SURVIVAL
ALSAC/St. Jude Children's Research Hospital - Danny Thomas, Founder
800.822.6344 | www.stjude.org
*Based on national averages over the past 10 years in diseases St. Jude played a leading role in treating and curing.
revised 03/07 ©2007 ALSAC

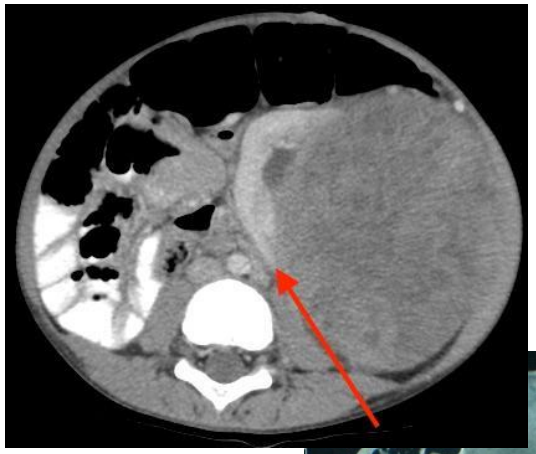
A mother felt abdominal mass while bathing her child, what it could be?

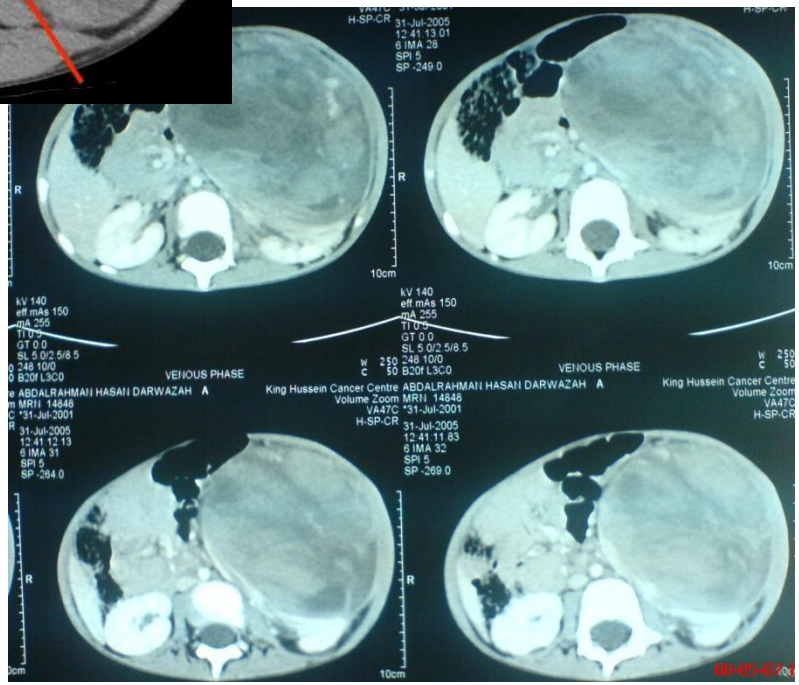


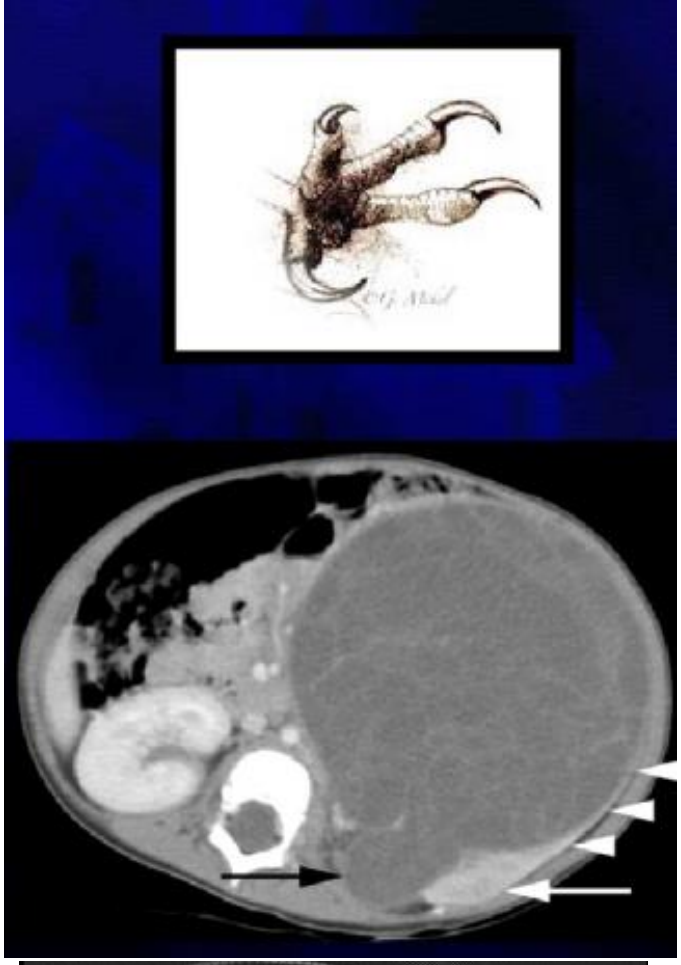
Kidney tumors in Children

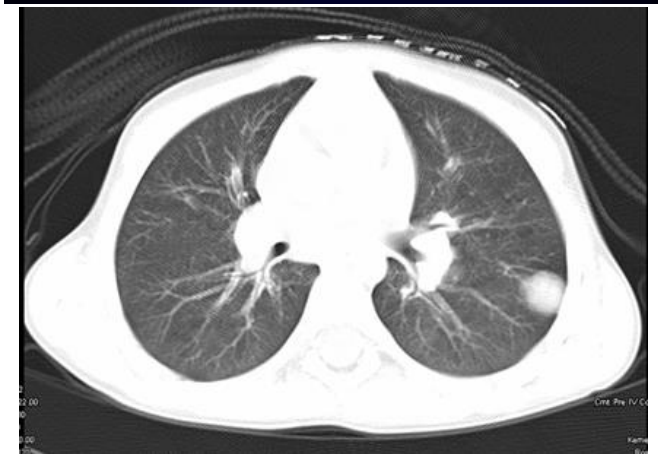


Wilms Tumor (Nephroblastoma)

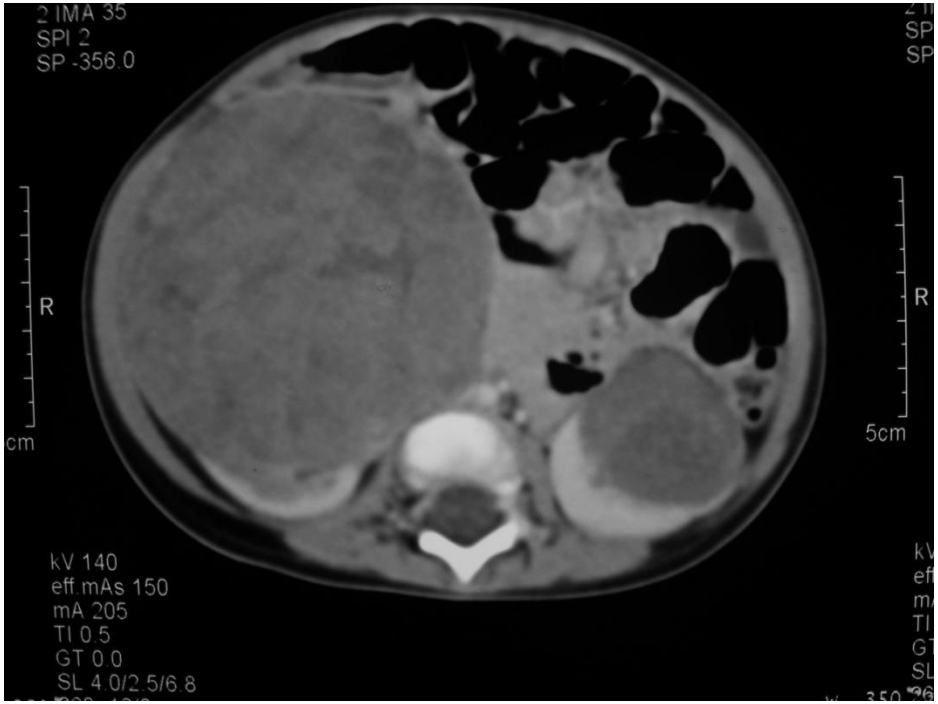


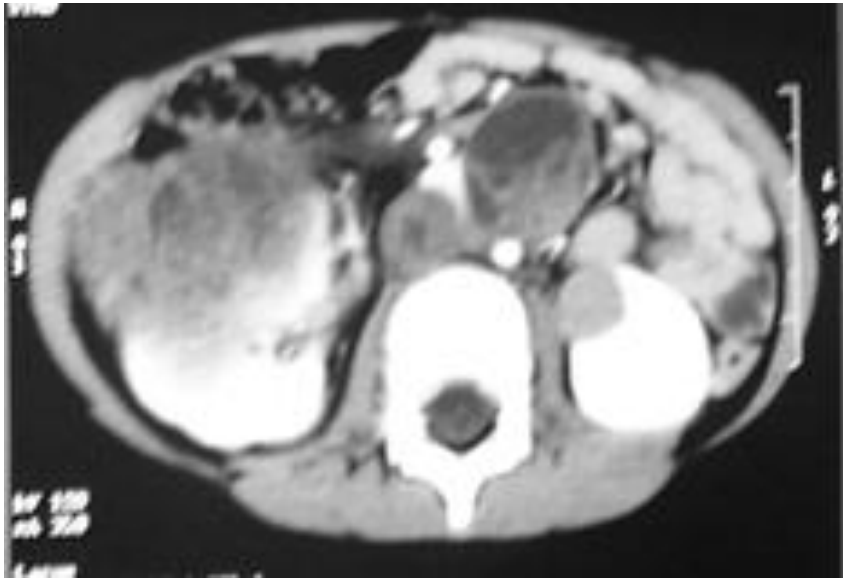


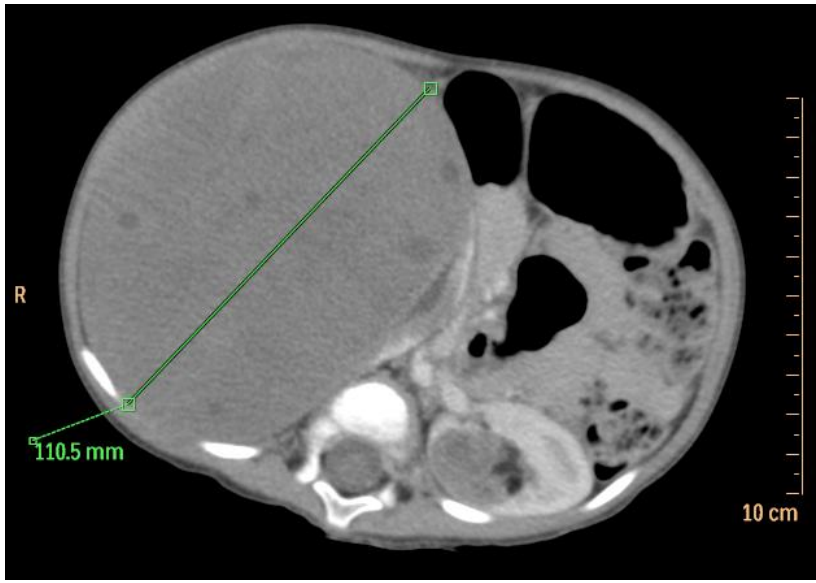




Stage 5: Bilateral WT

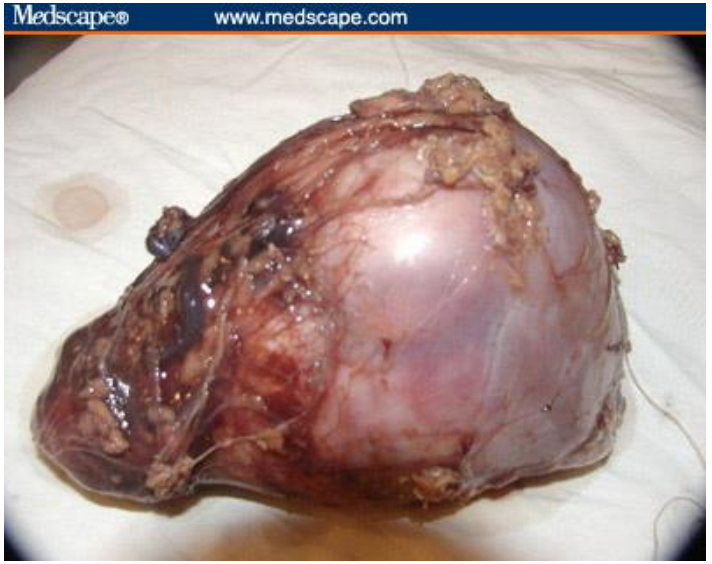


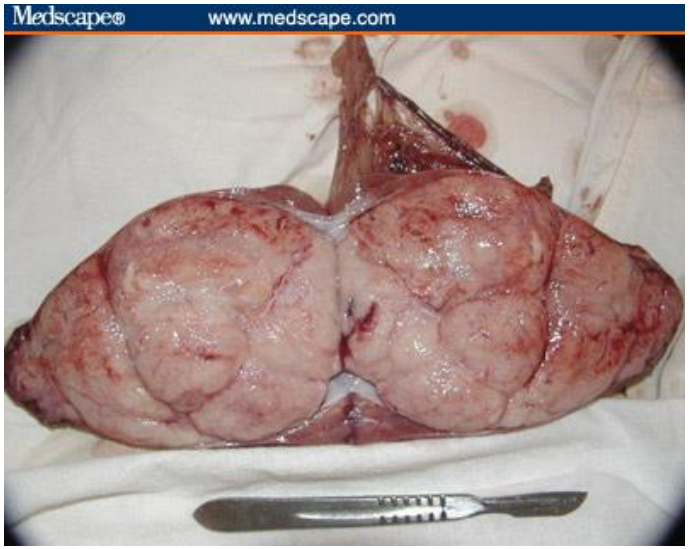




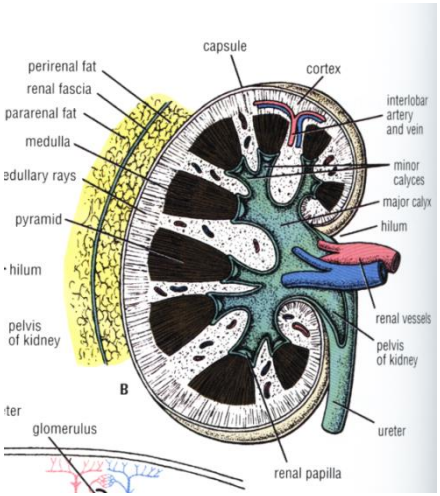
Wilms Tumor a Fragile Tumor

- Fragile, gelatinous.
- Can rupture easily.
- Gentle exam.
- Avoid trauma.
- Surgery: avoid spell, inspect other kidney, sample LN.
- Its important for staging, chemo. & XRT.





Wilms T. Stages



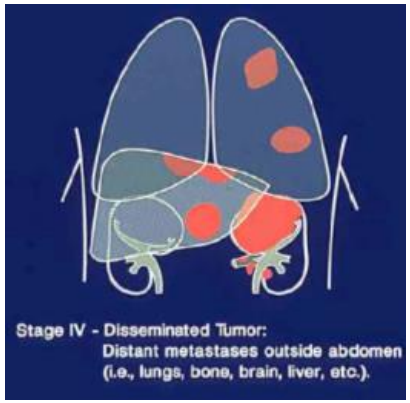
Prognosis at 4 years: NWTS

- Stage I 89%
- Stage II 87%
- Stage III 82%
- Stage IV 79%

S 3 & 4 :
Surgery +
Chemo. +XRT

Stage 3

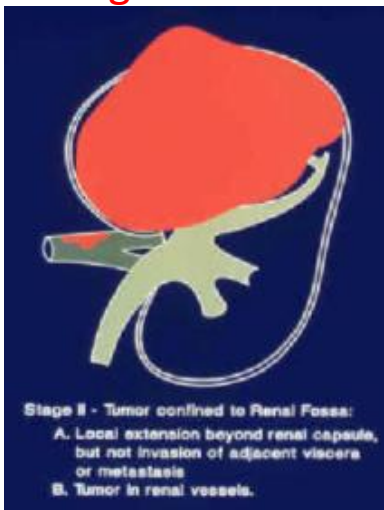
Stage 4

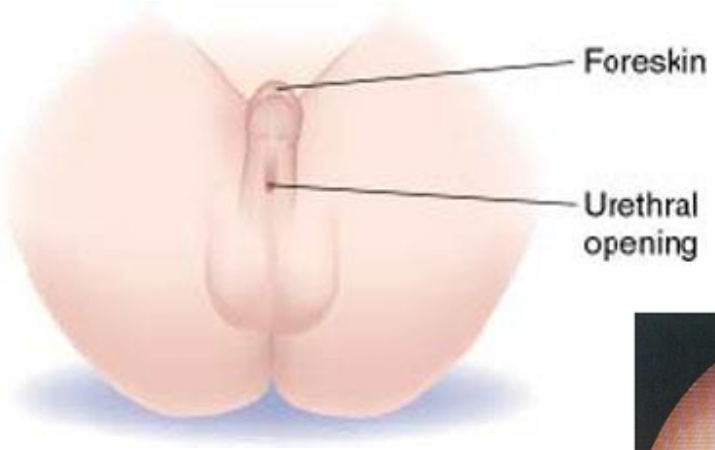


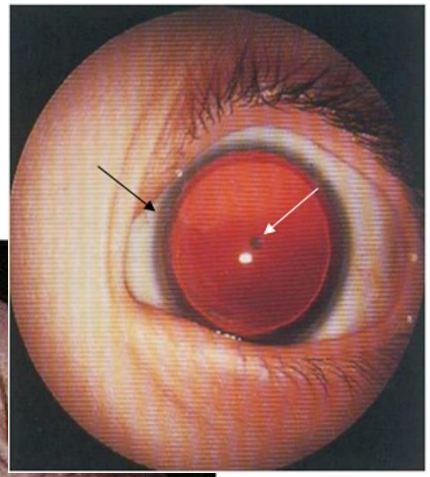
S 1 & 2 :
surgery+chem
otherapy

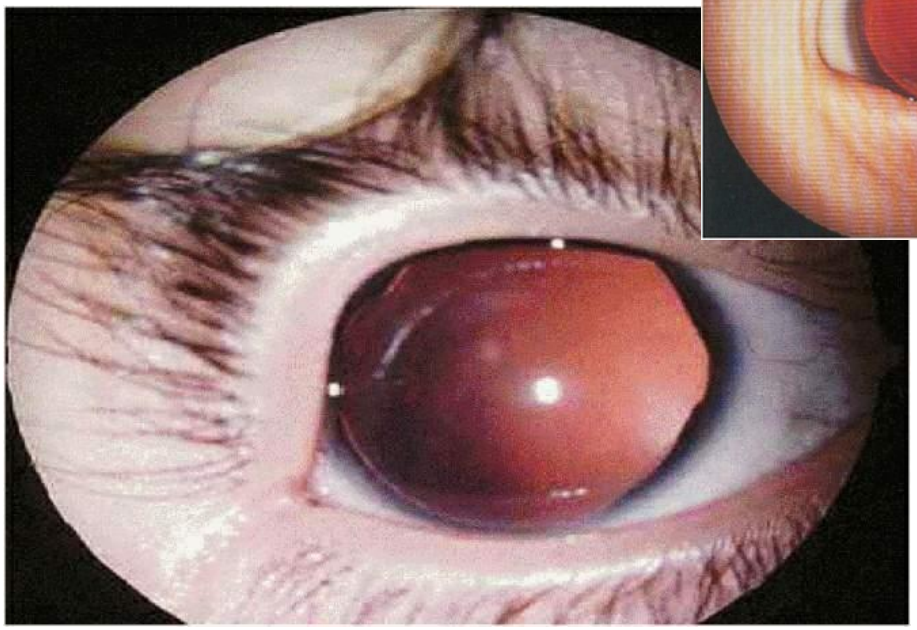
Stage 1

Stage 2

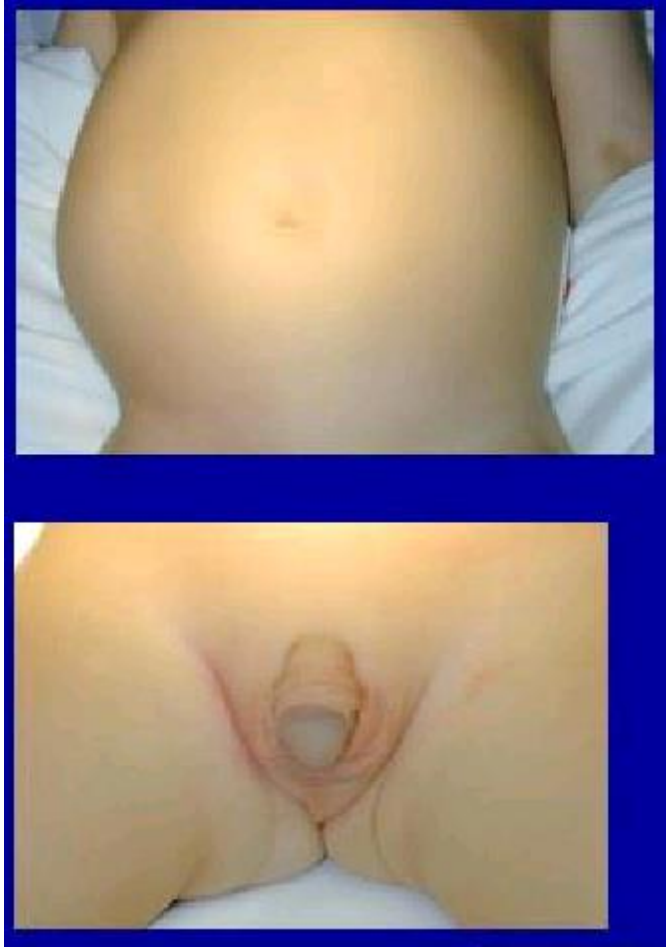






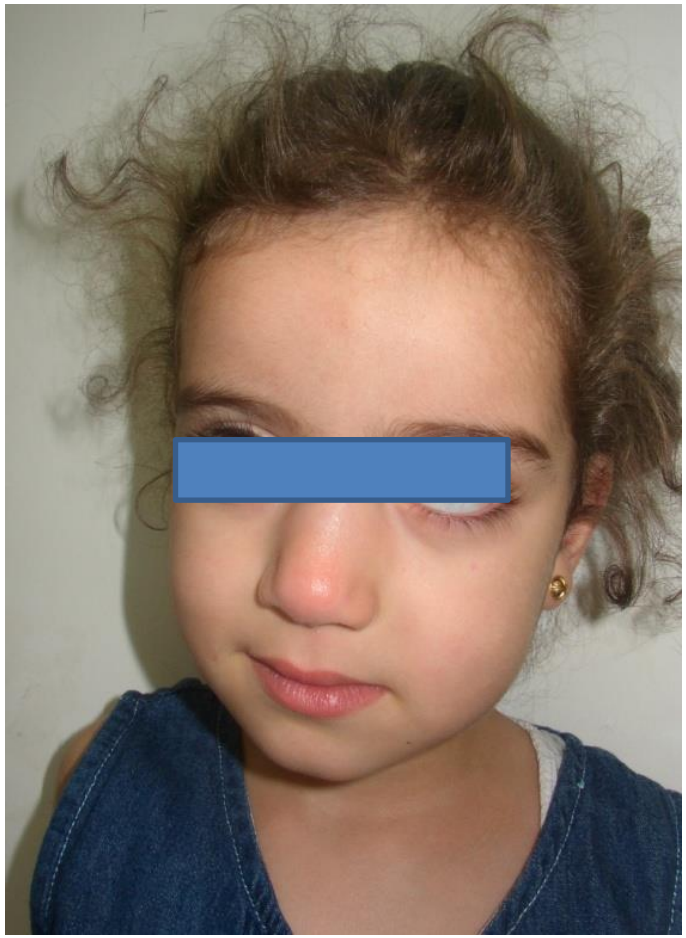


ANIRIDIA IN 1.5% DEVELOP WT.WITH DEFECT IN WT1 GENE (Ch 11p13)



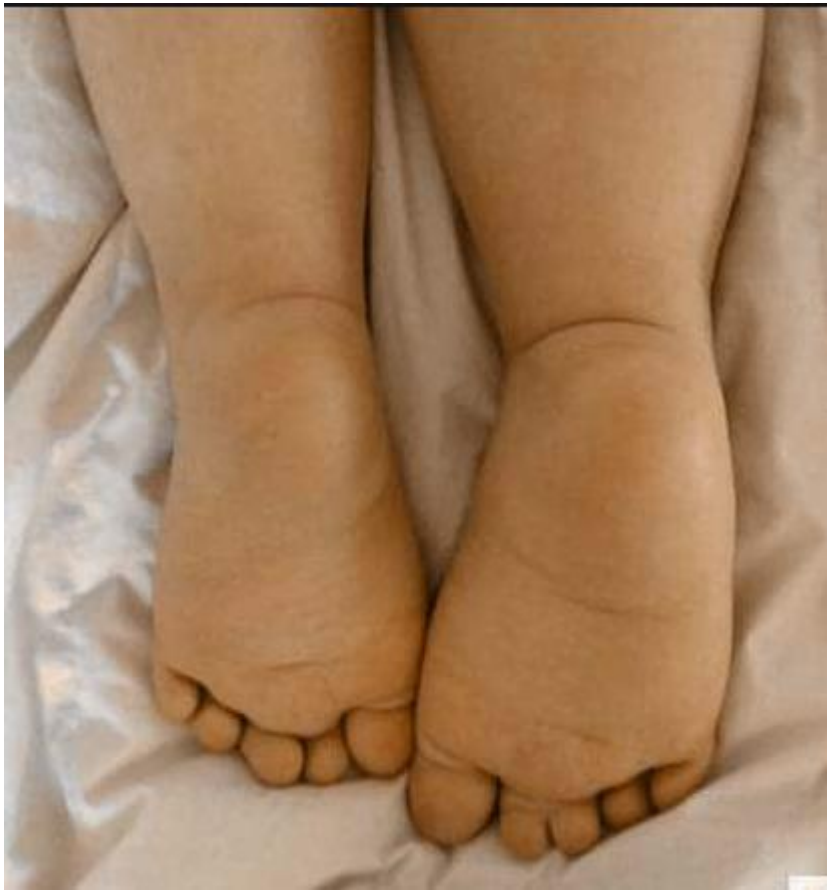
- Bilateral Cryptorchidism.

Lt Hemihypertrophy, lt Wt.

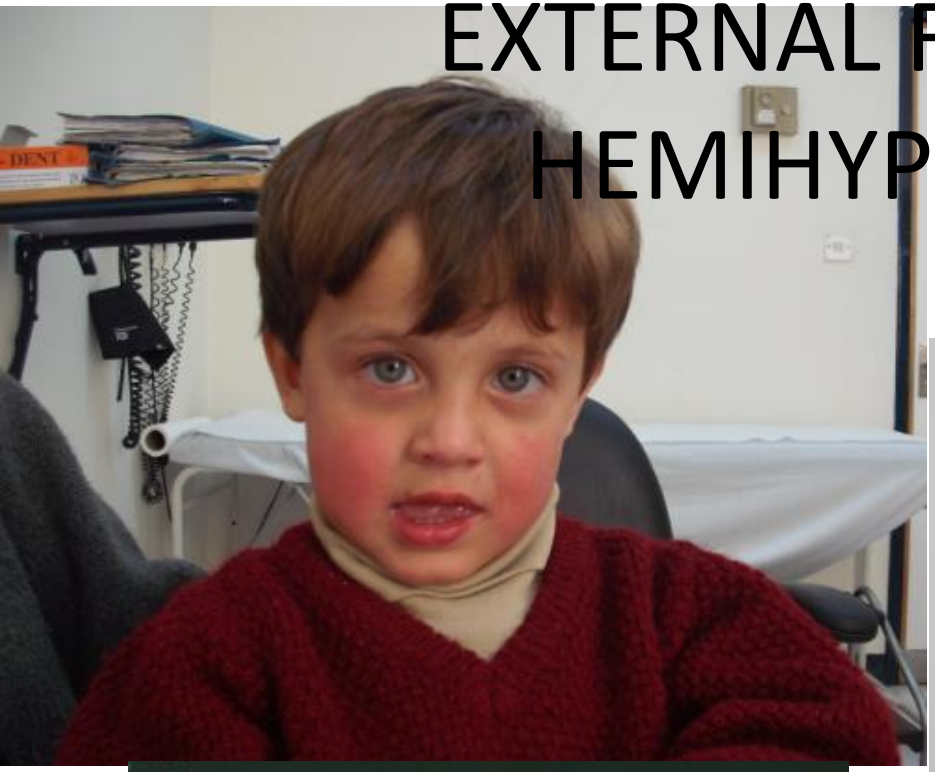


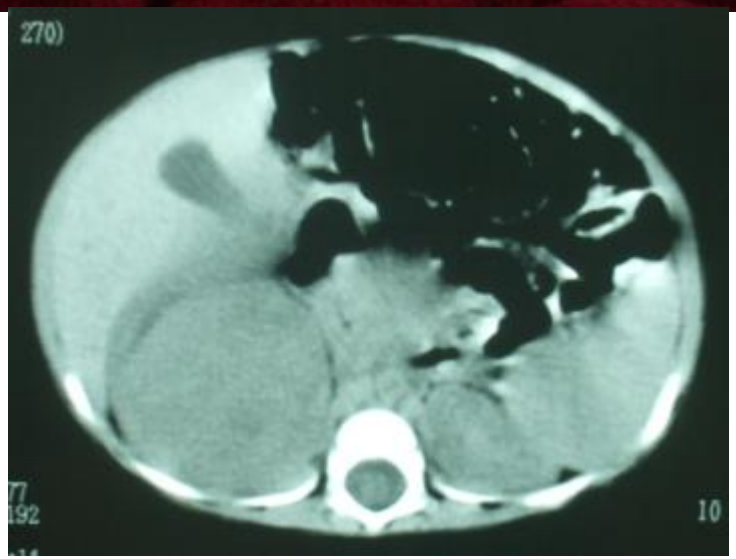
- Rt forearm22.5cm.
- Lt forearm 24.5cm.
- Rt leg 17 cm.
- Lf leg 17.5cm.

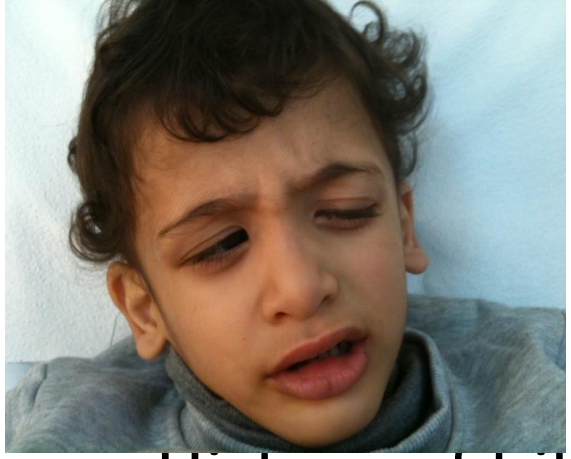
Hemihypertrophy other pt



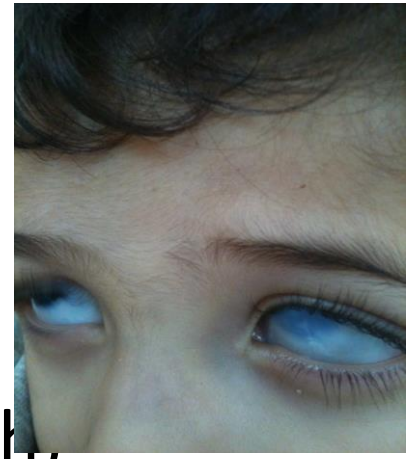
EXTERNAL FEATURES: Rt HEMIHYPERTROPHY



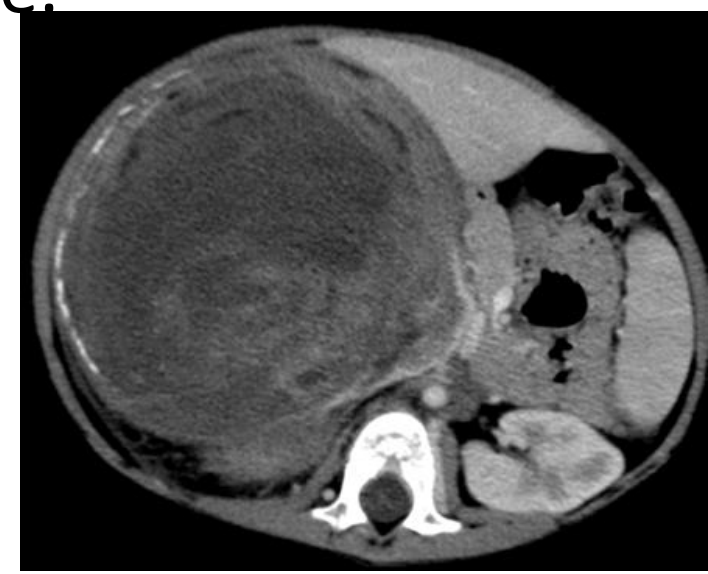


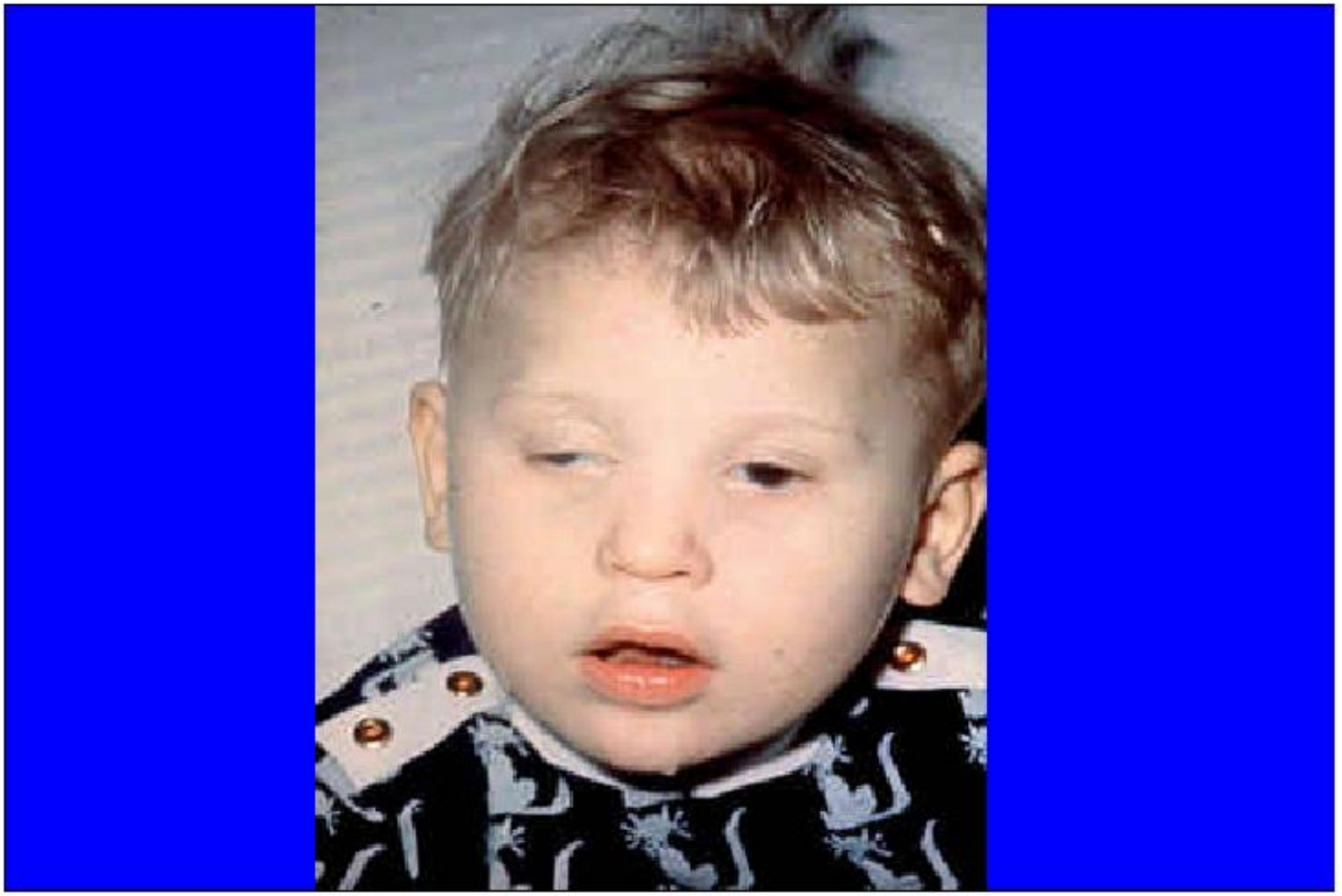


WAGER S.



- History of bilateral glaucoma(since birth)
- Speech delay → says only (baba)
- Low set ears.
- Nystagmus and aniridia of Rt eye.
- Complete opacity of Lt eye..
- Rt flank palpable mass.
- Bilateral descending testes.
- **Lt eye** Corneal opacity





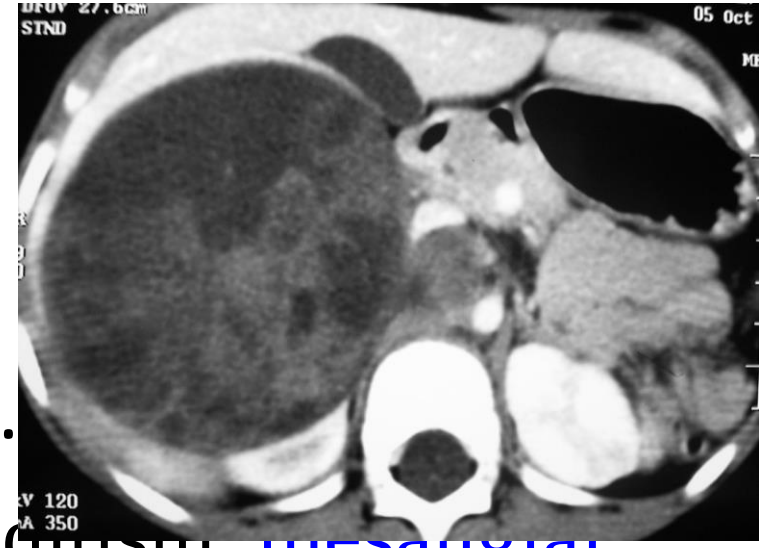
This child has aniridia and the WAGR syndrome (Wilm's, aniridia, genito-urinary anomalies and mental retardation).

- Deletion at 11p13, WT1 gene, Risk of developing Wilms tumor is >30%

Denys-Drash Syndrome:

- Gonadal Dysgenesis.
- Nephropathy.
- Wilms tumor.
- mutations in the Wilms tumor suppressor gene, WT1, on chromosome 11 (11p13)

Halaa



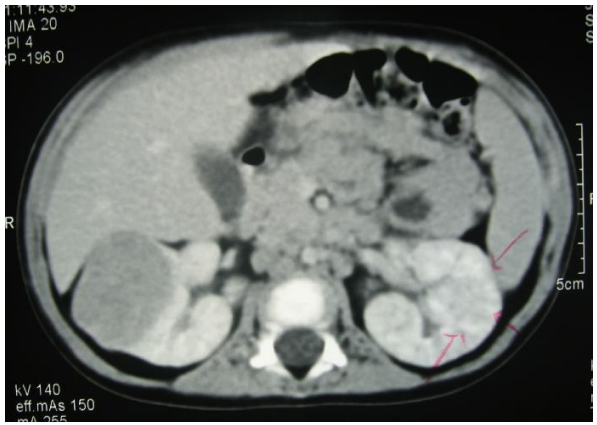
- Persistant Proteinurea.
- Ambiguous genitalia.
- Absent ovaries and uterus.
- Triad of pseudohermaphroditism, mesangial renal sclerosis, and Wilms tumor.

Beckwith syndrome : Wt and Nephrogenic rests.

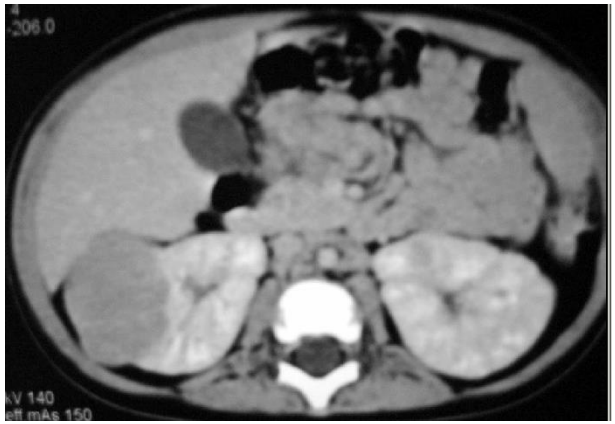
- 1 yr old boy

  Beckwith syndrome

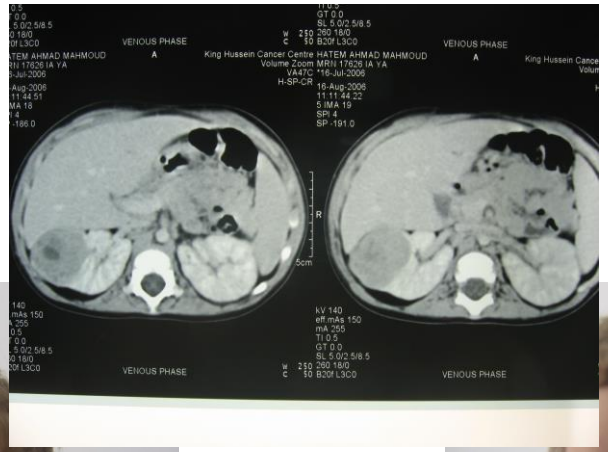
- Rt kidney tumor & Lt kidney multiple hypodens areas.

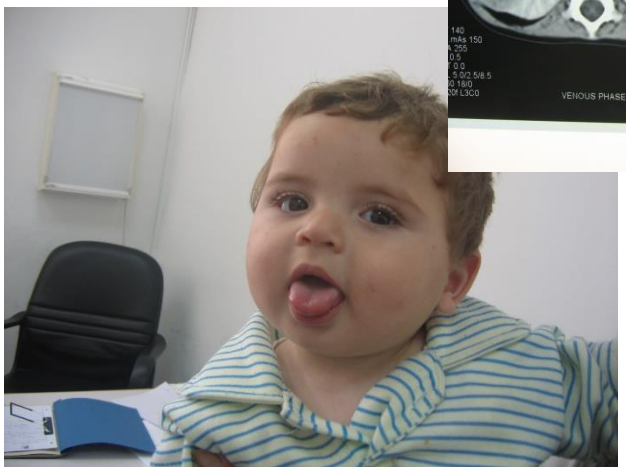


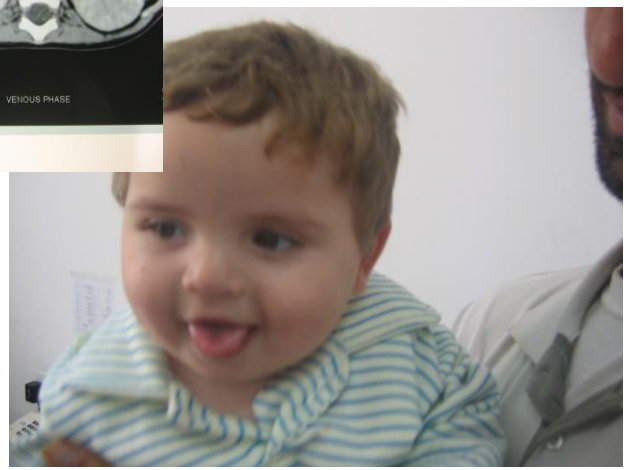
- Predispose for Wilms tumour & Hepatoblastoma.



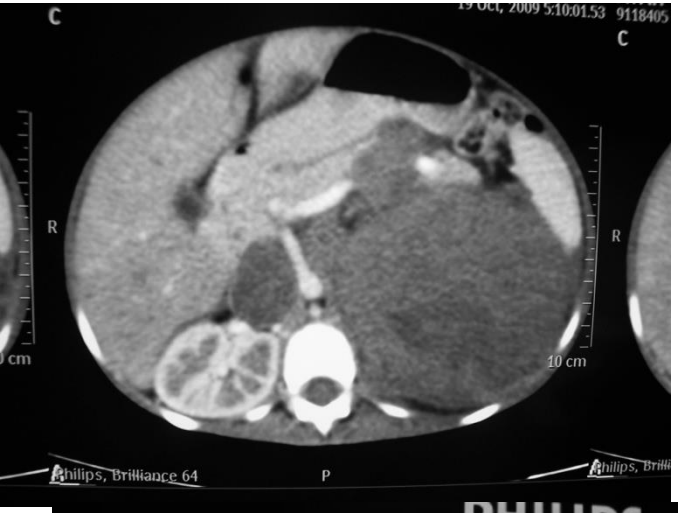
Hatem


VENOUS PHASE
King Hussein Cancer Centre HATEM AHMAD MAHMOUD
Volume Zoom MRN 17626 IA YA
VA47C 16-Jul-2006
H-SP-CR
16-Aug-2006
11:11:44.22
5 IMA 19
SP 4
SP -191.0
VENOUS PHASE
VENOUS PHASE
VENOUS PHASE

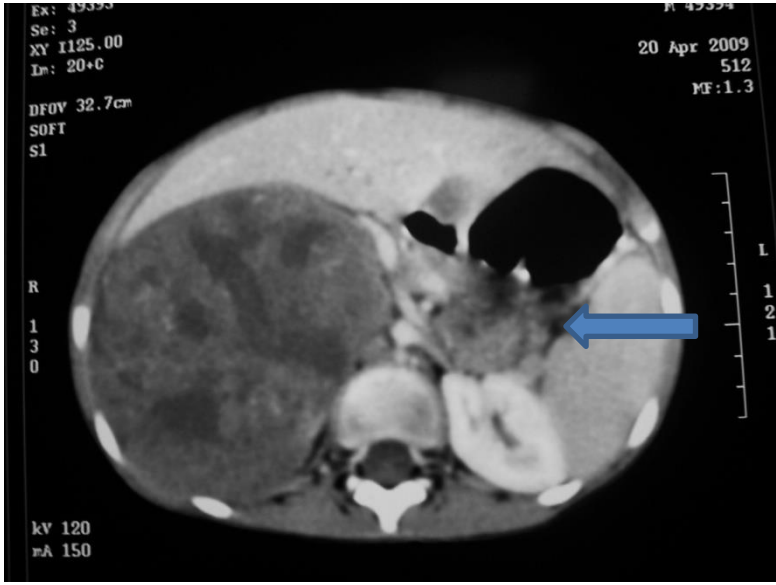


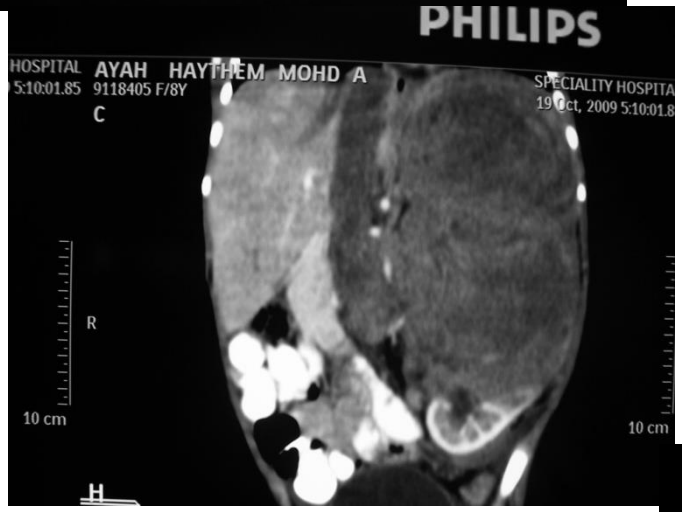


Describe?

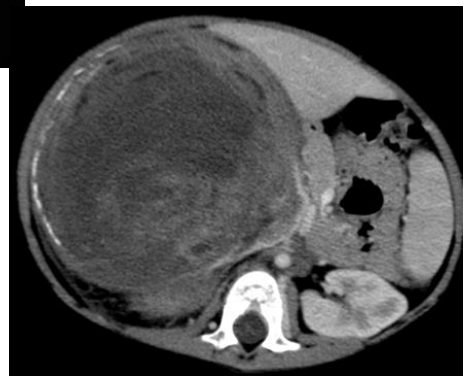


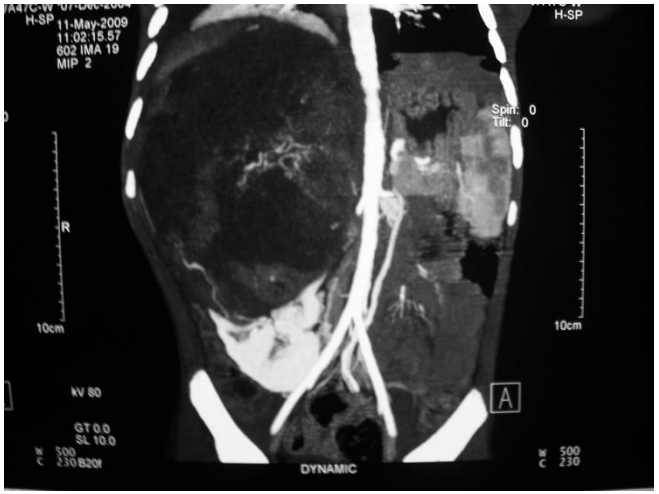
Extent

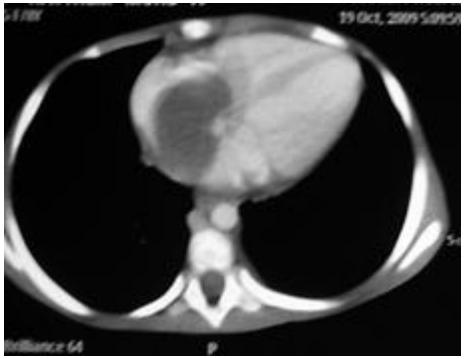




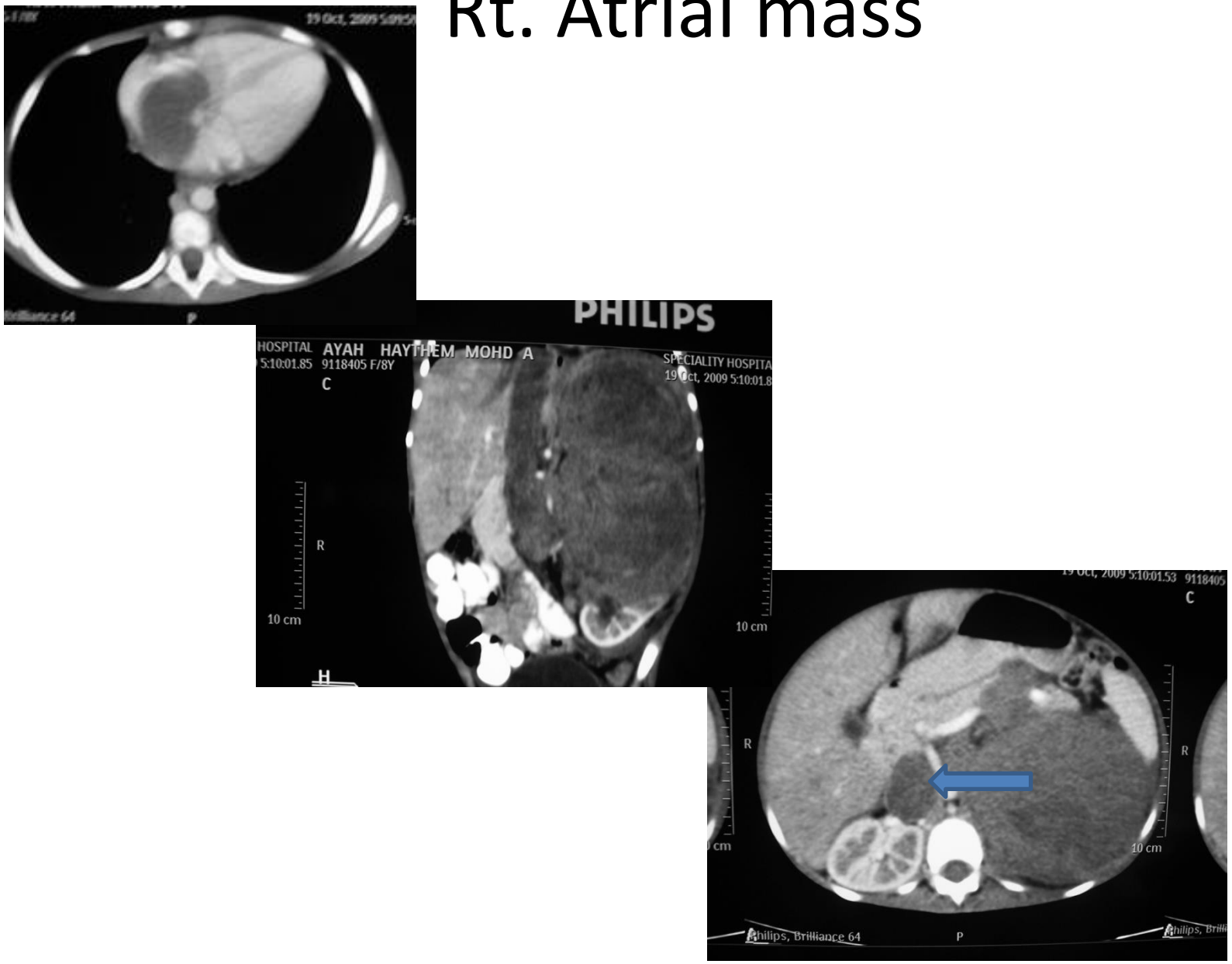
Rupture







Bad: Inferior Vena cava thrombosis Rt. Atrial mass



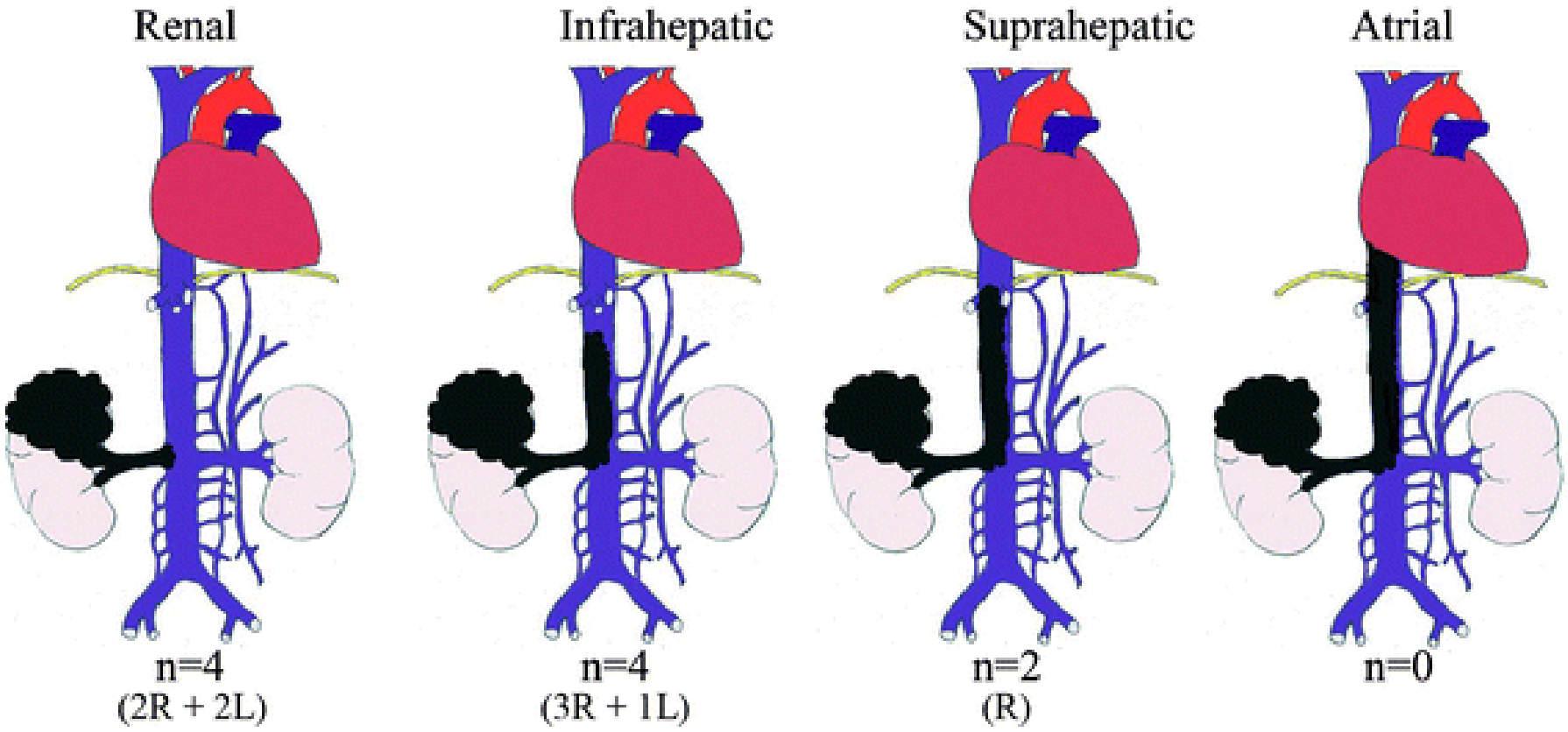
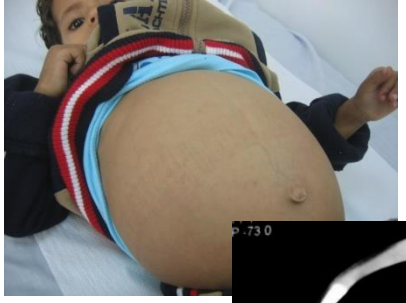
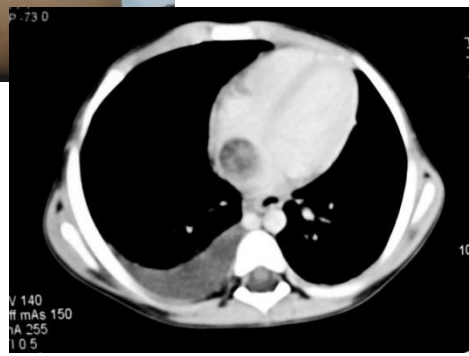
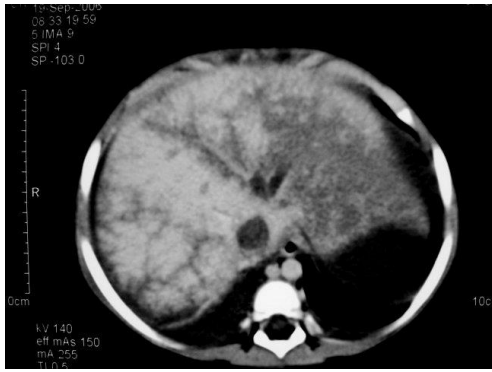


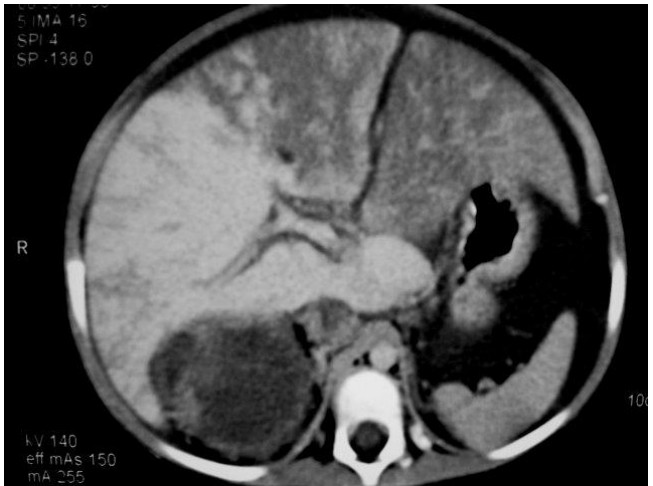
Fig. 3. Venocavography, exact determination of thrombus cephalad extension.

Wilms tumor: intracardiac extension.



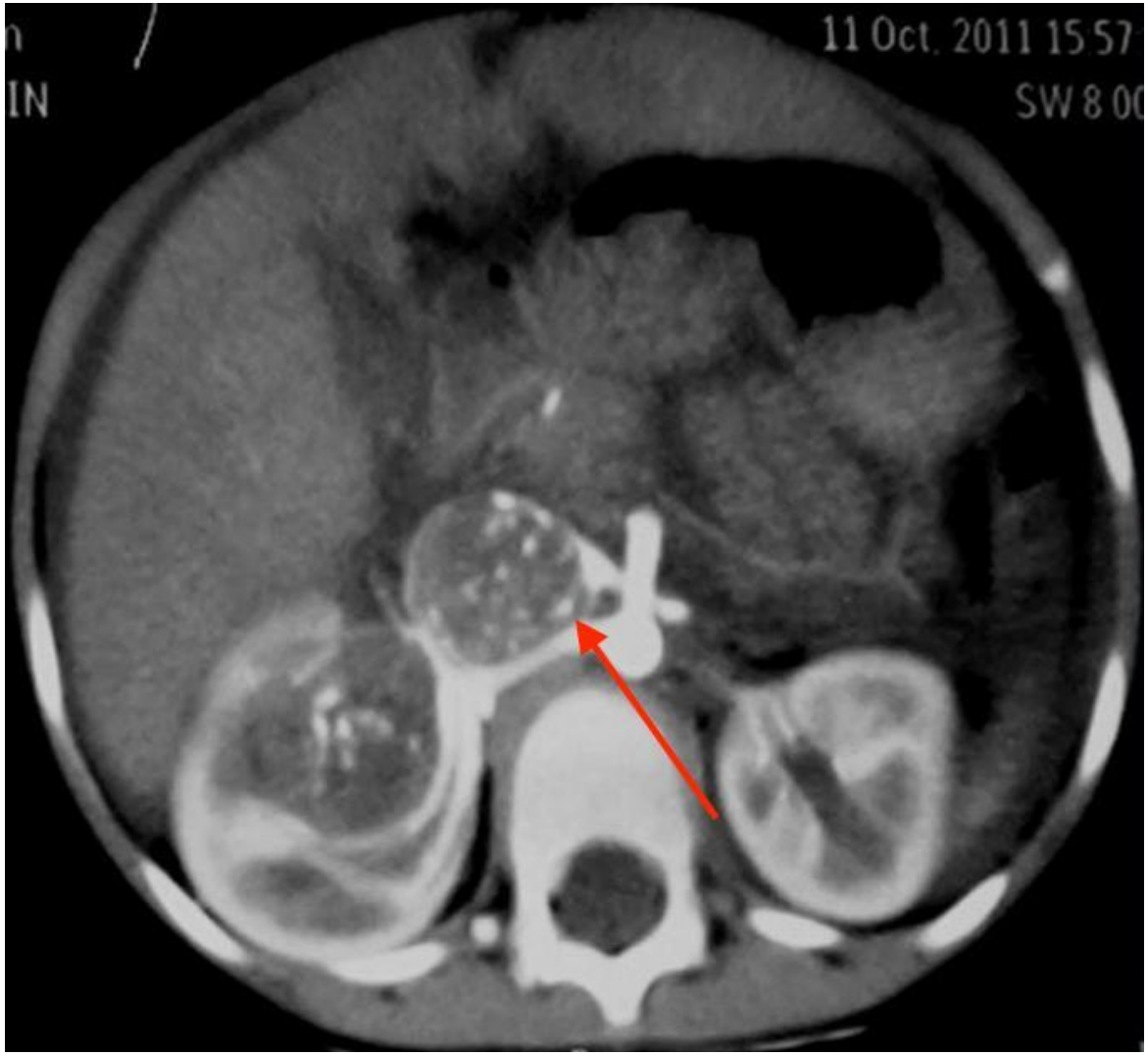




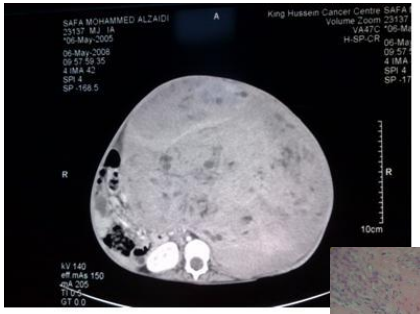


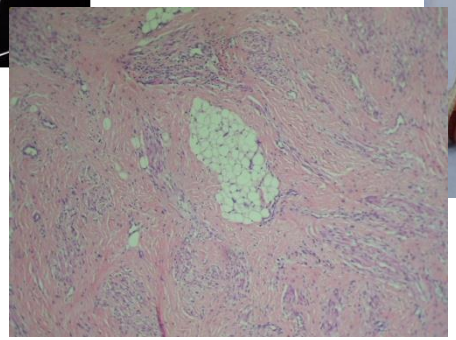
- 3yr old gir, Rt kidney mass, extensive IVC thrombosis reaching Rt atrium.
  occluded hepatic veins, massive ascitis.
- Echo : Large RT atrial mass 2.8x2cm.
- Very important always not to miss to identify IVC.

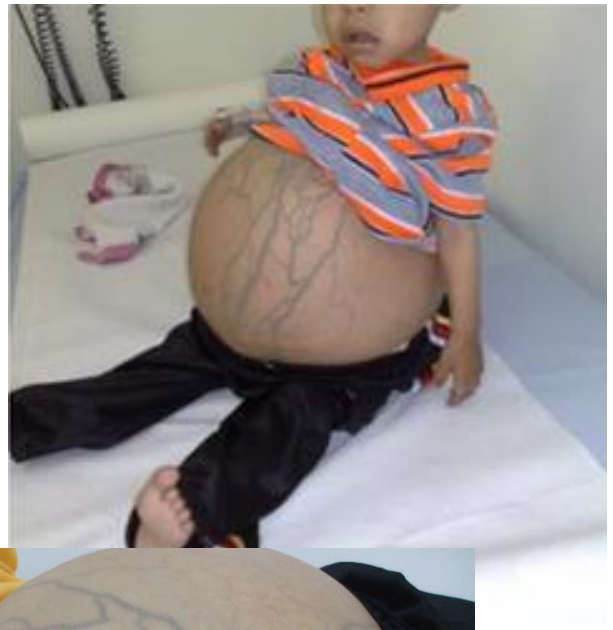
What is this structure?

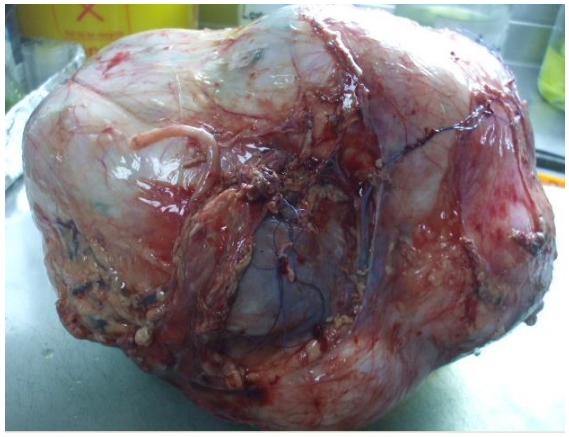


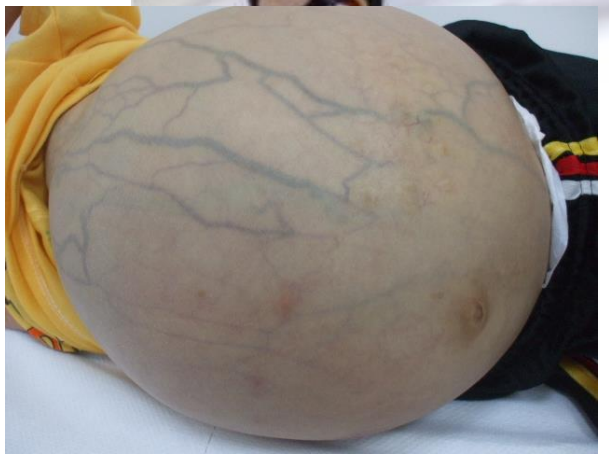
Refer early



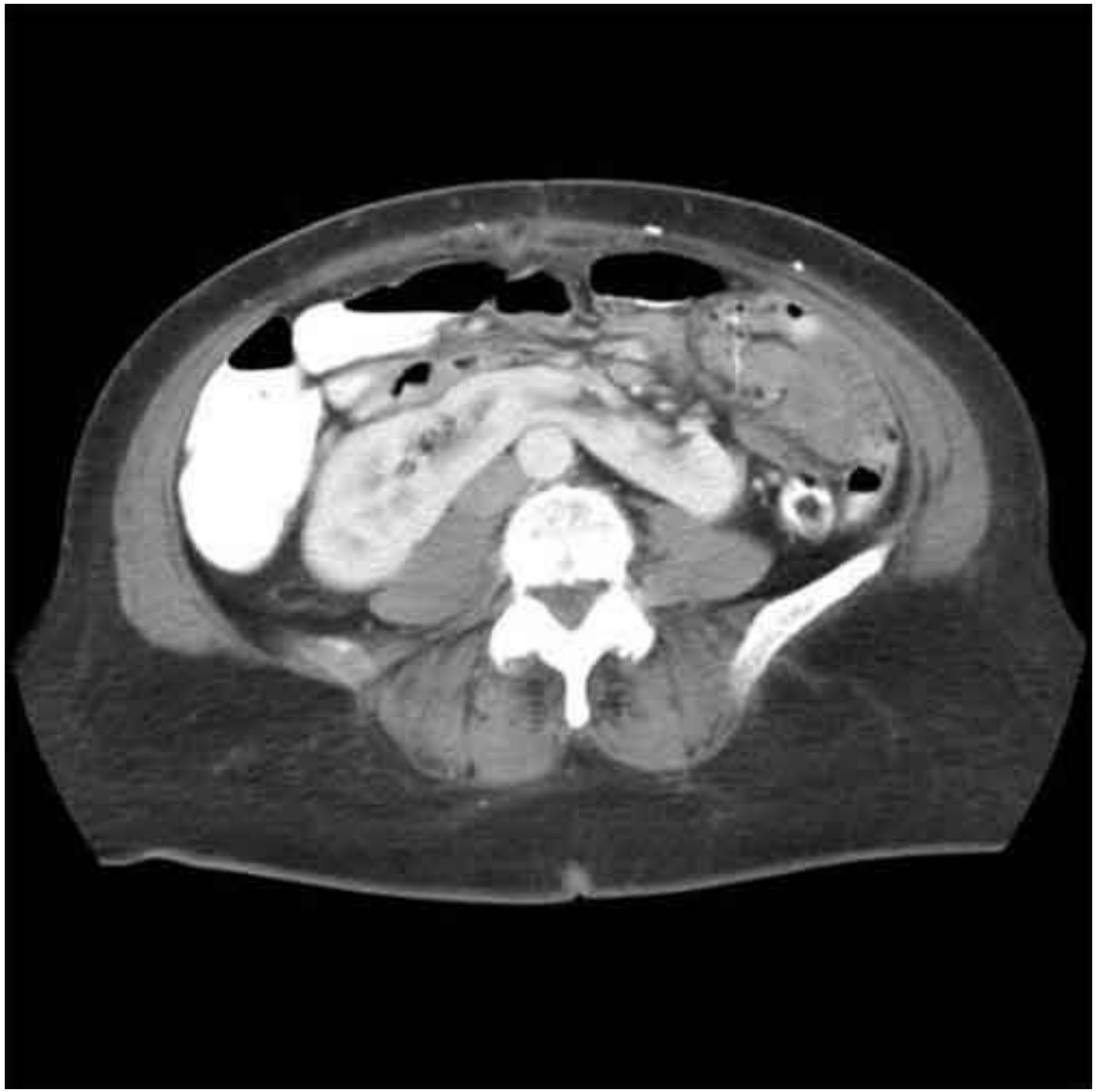




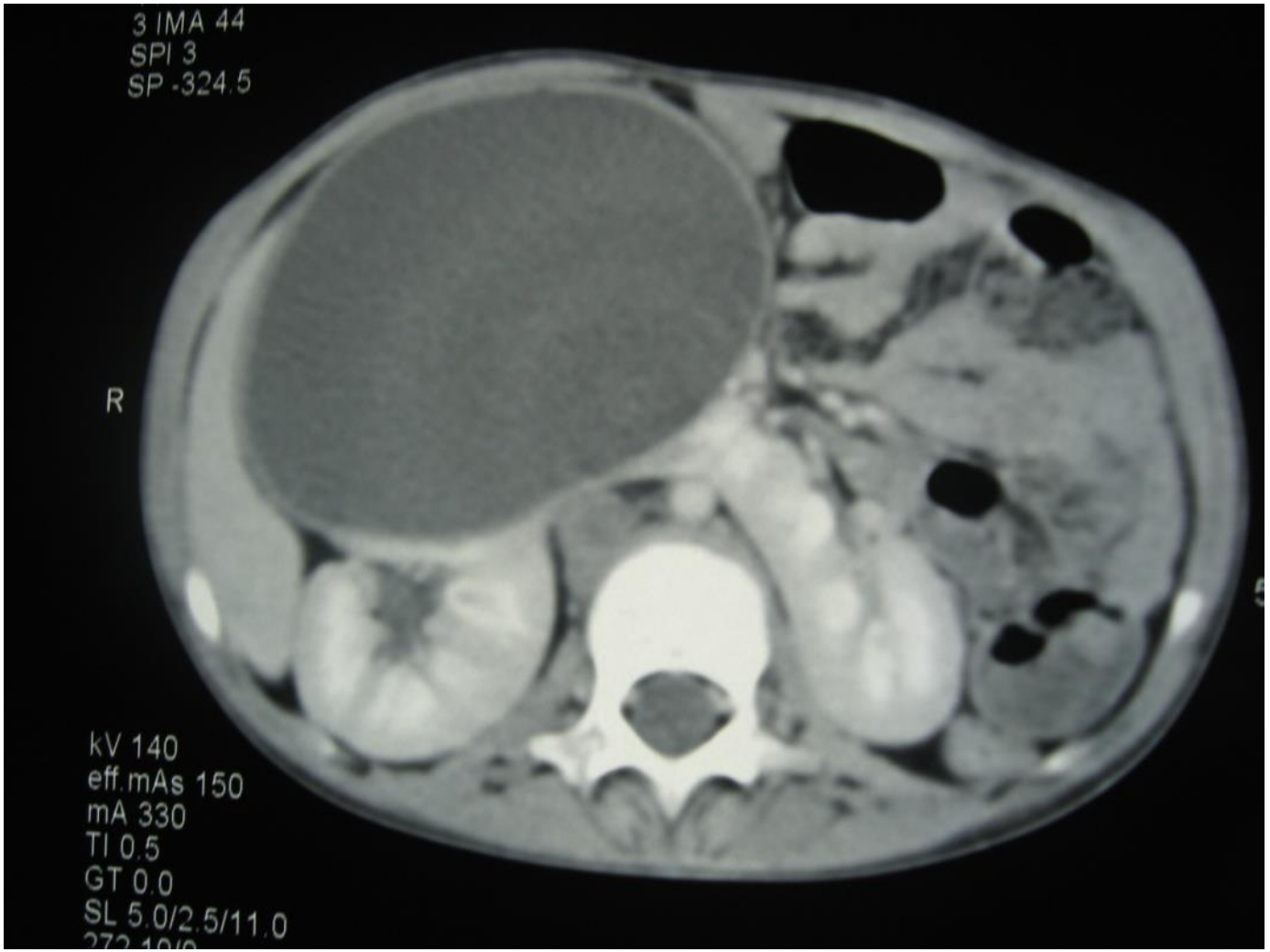




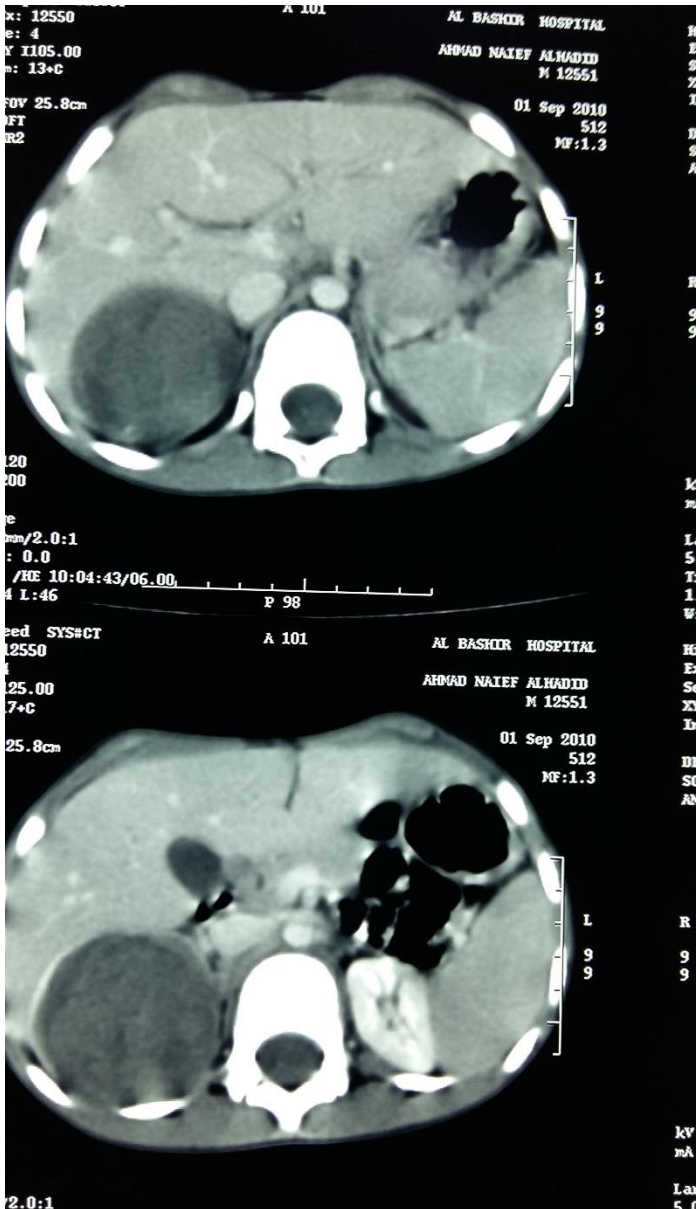
What is this?

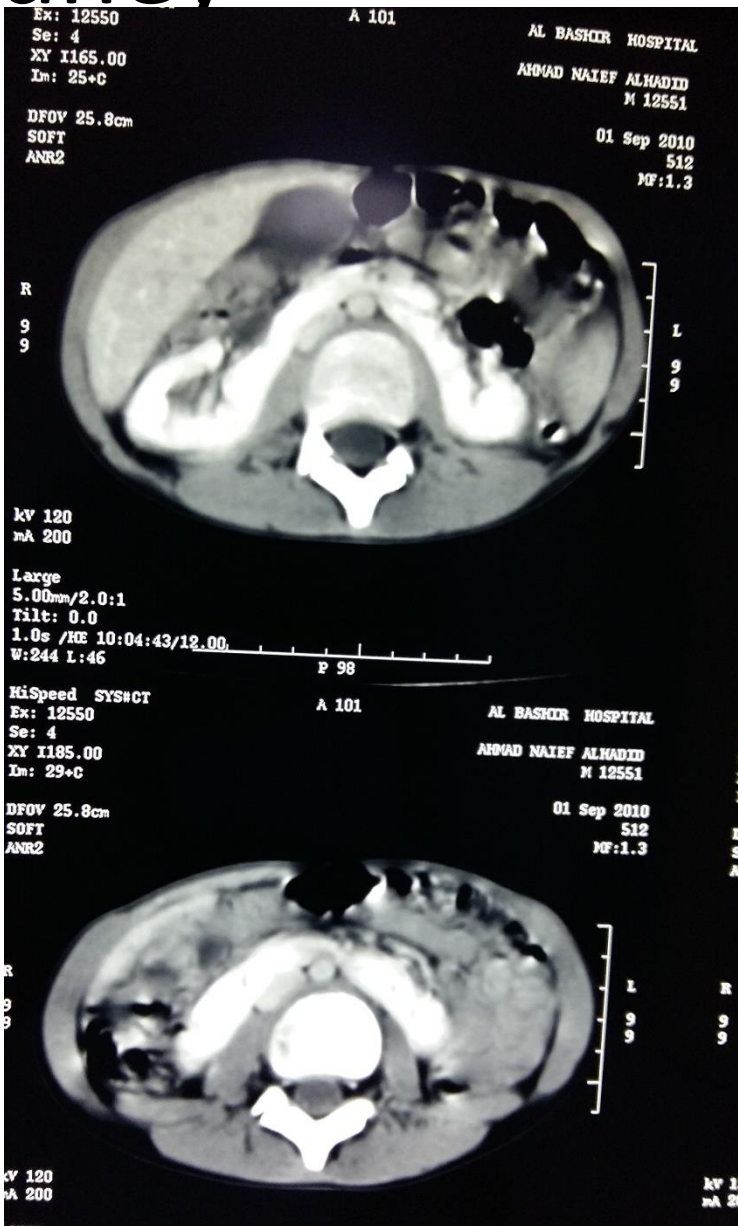


Hoarseshoe kidney



Hoarseshoe kidney





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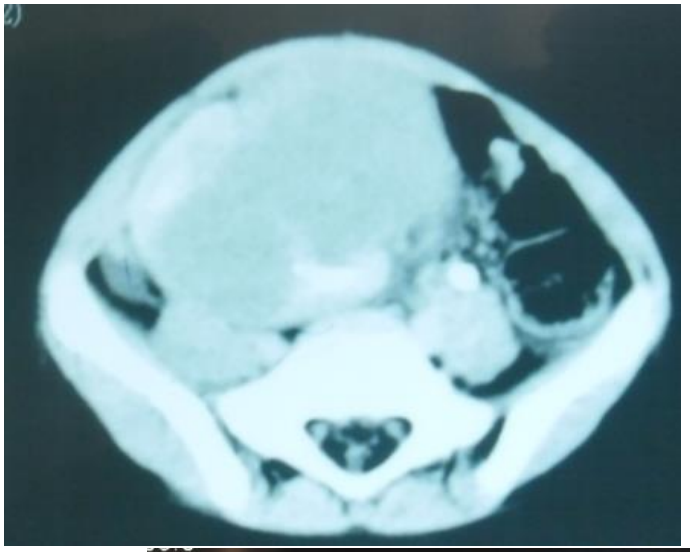
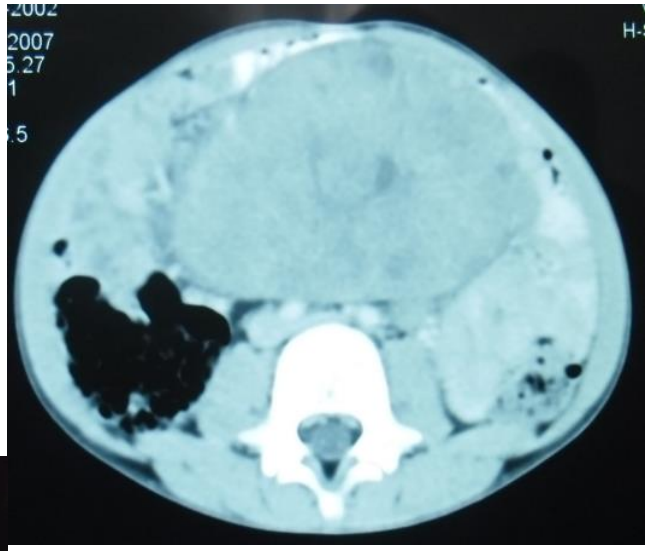
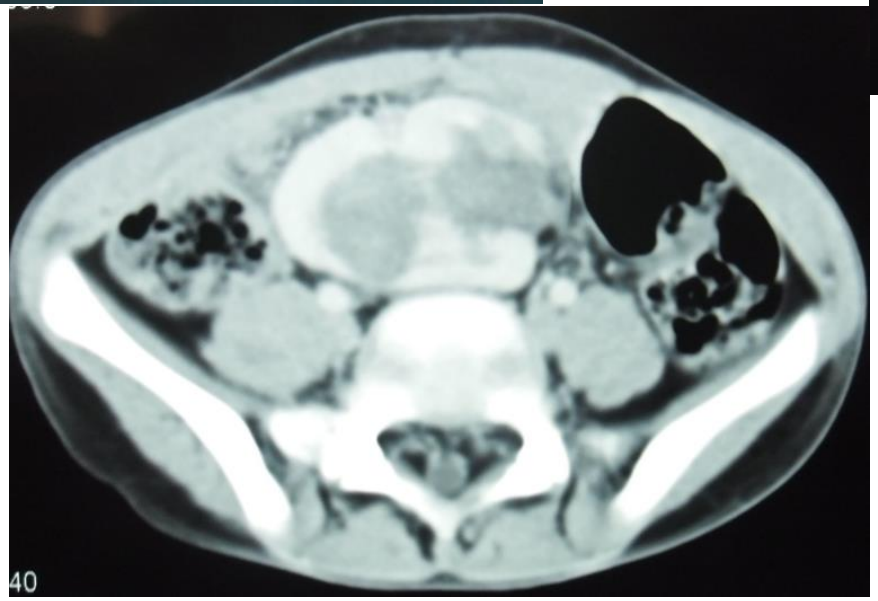
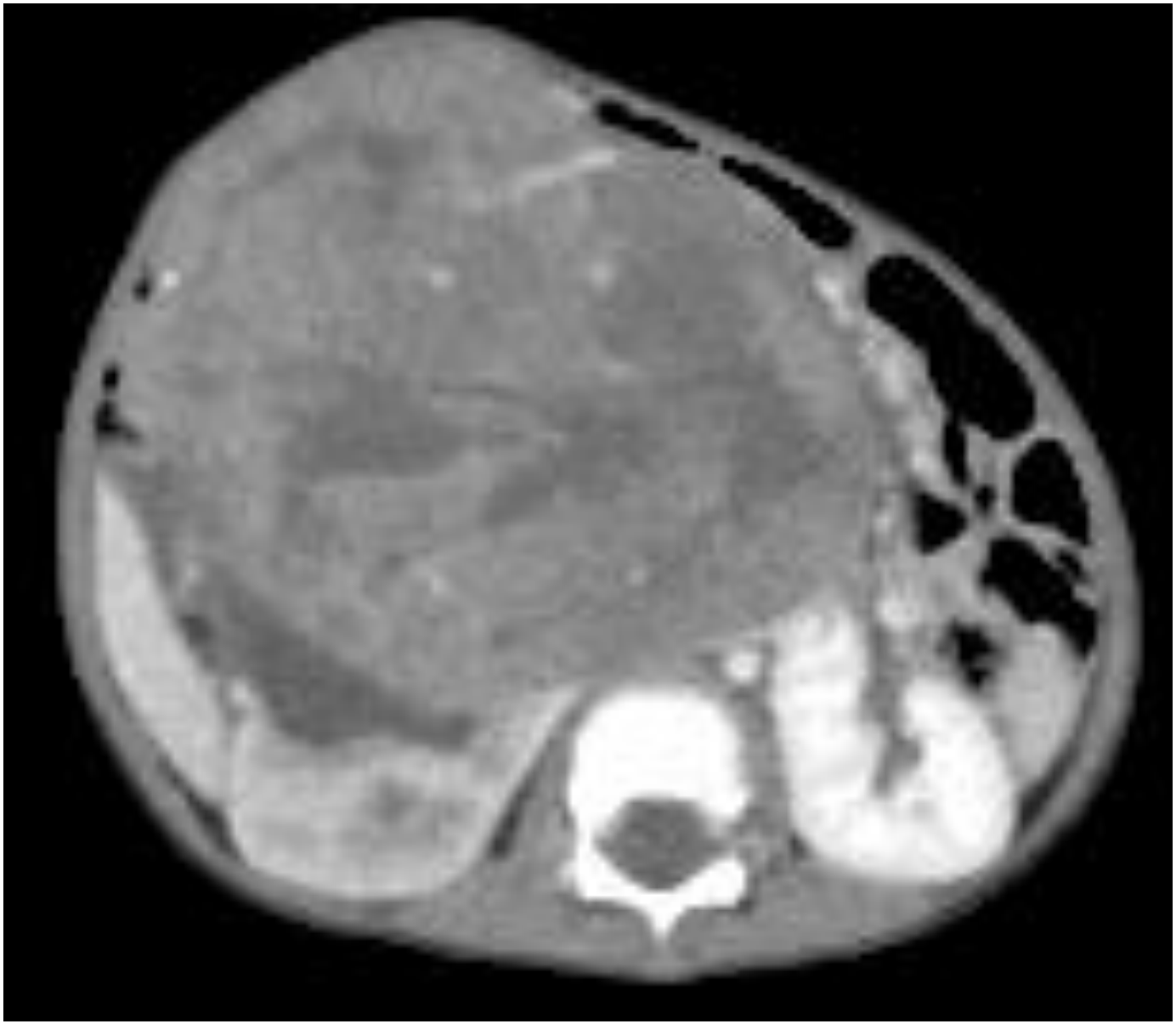






Sanad.Question: Diagnosis?



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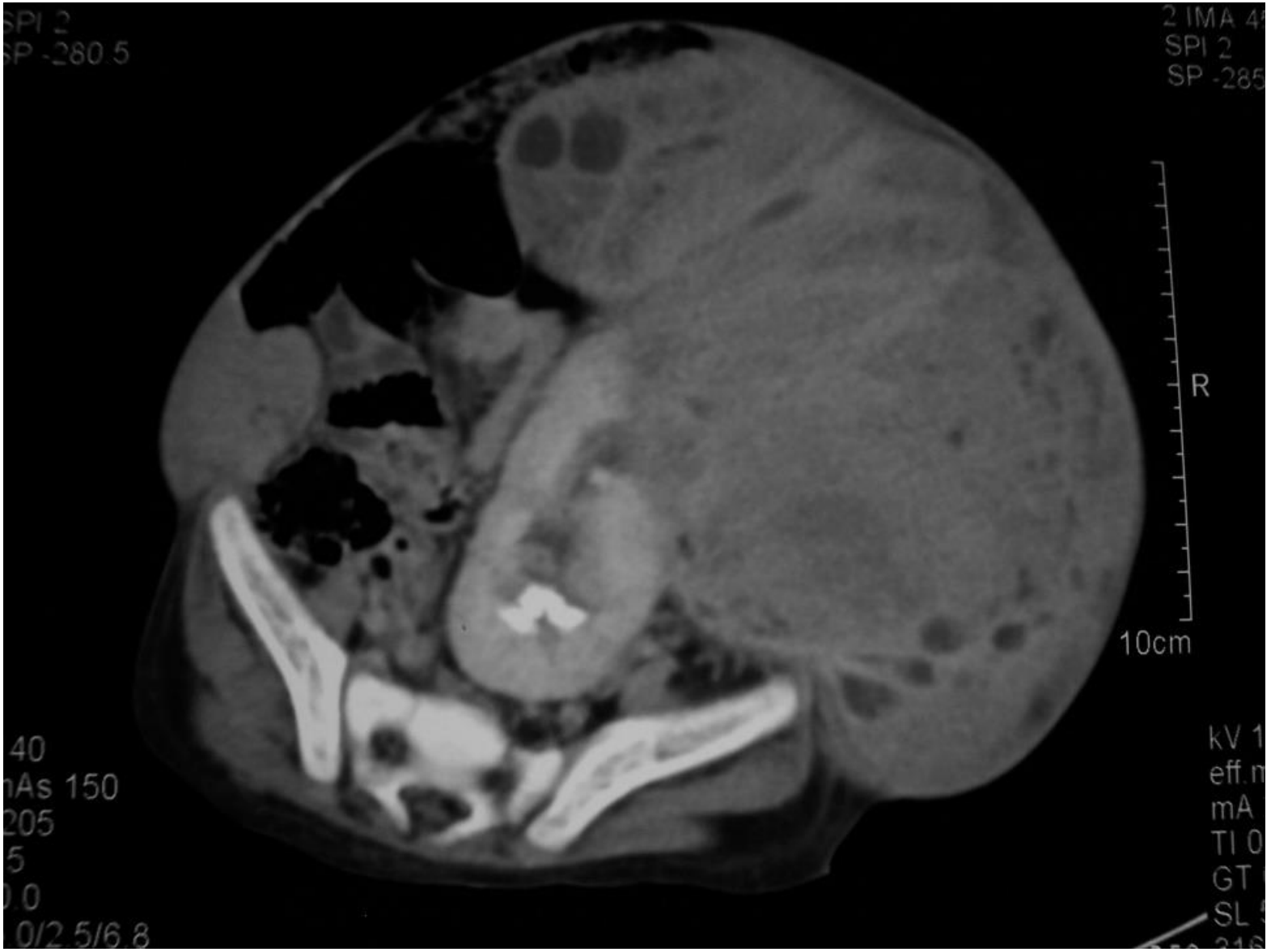
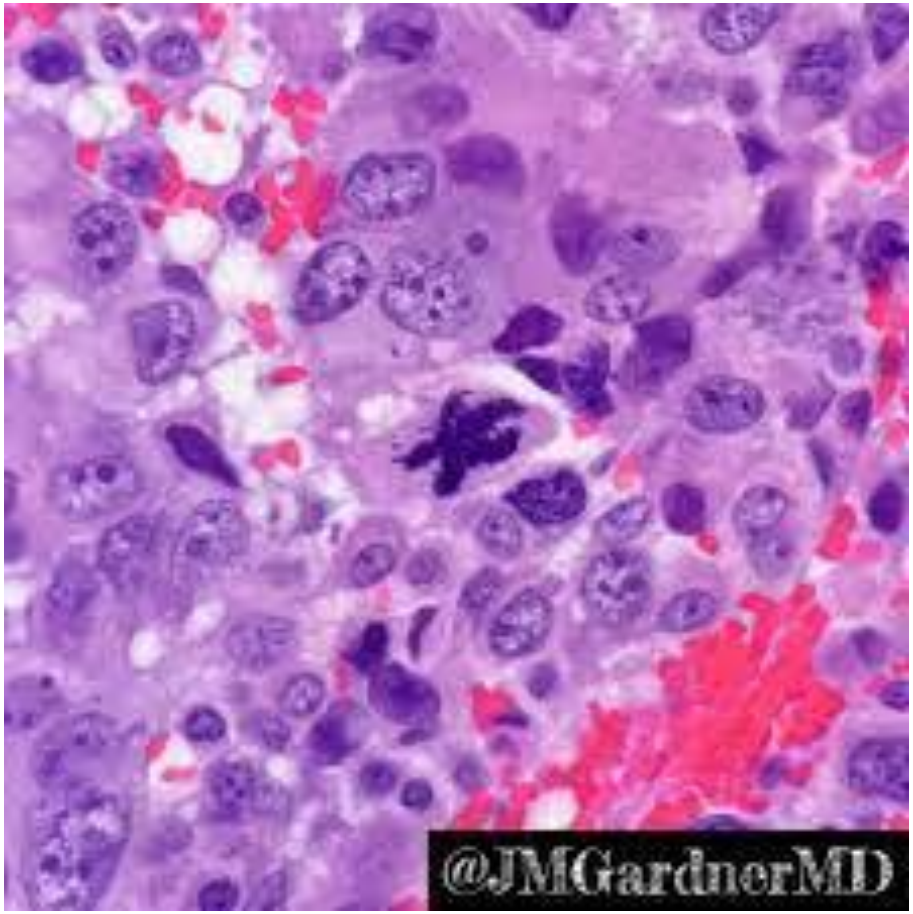
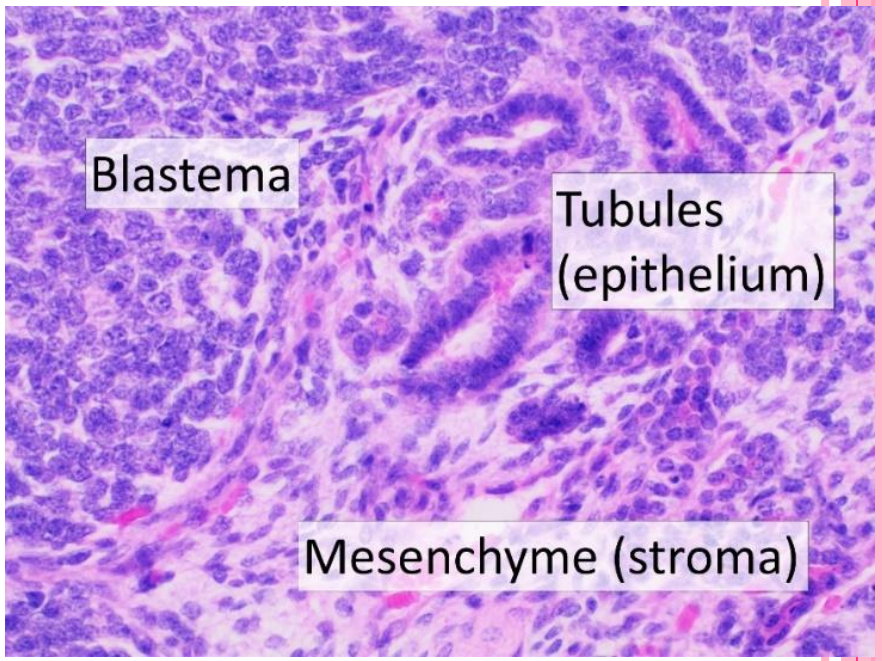


Histology

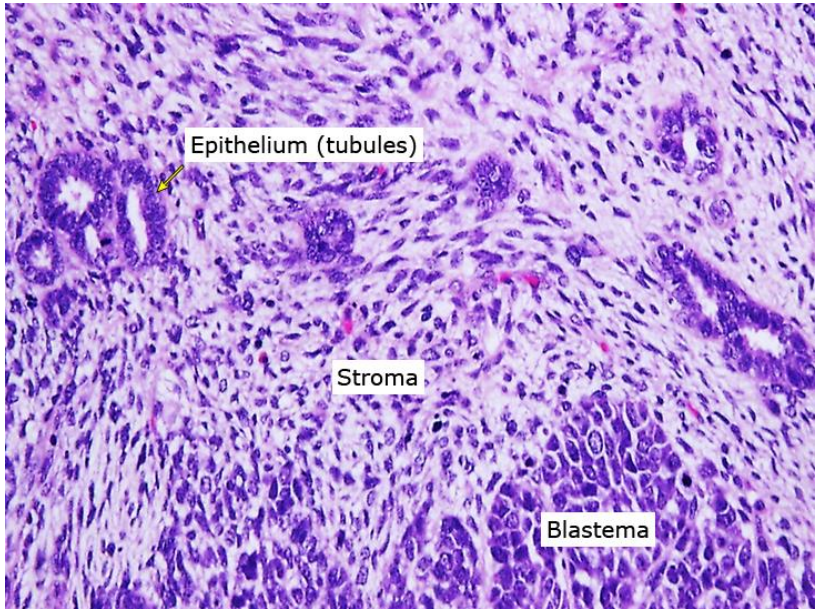


Diffuse anaplasia
Unfavorable histology



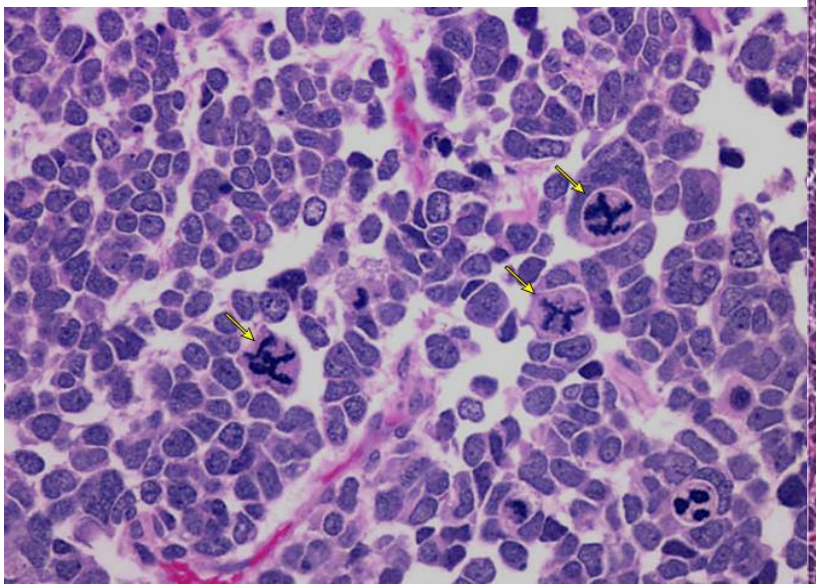
Favorable histology

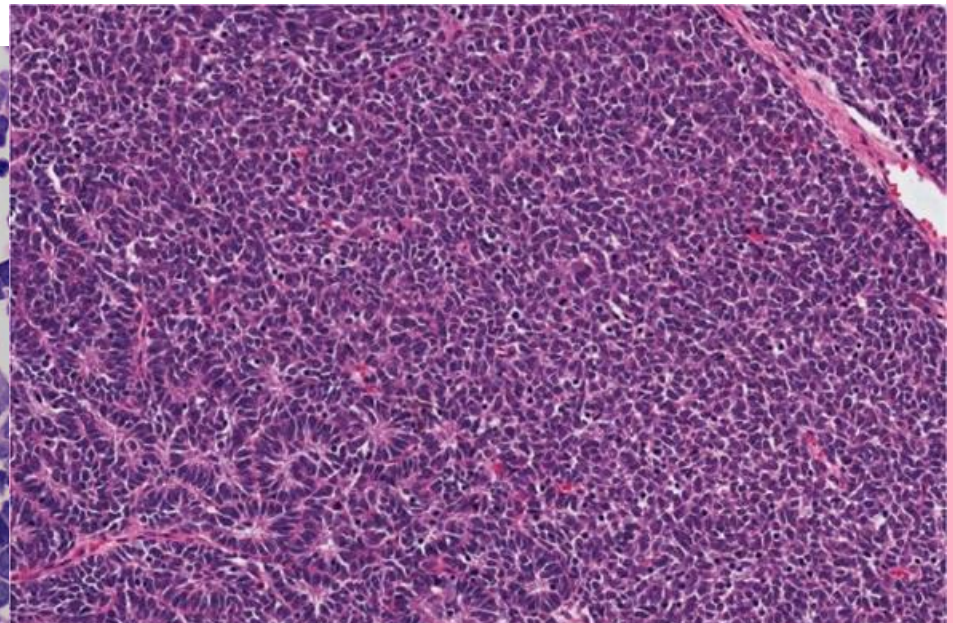
Good and Bad in Histology



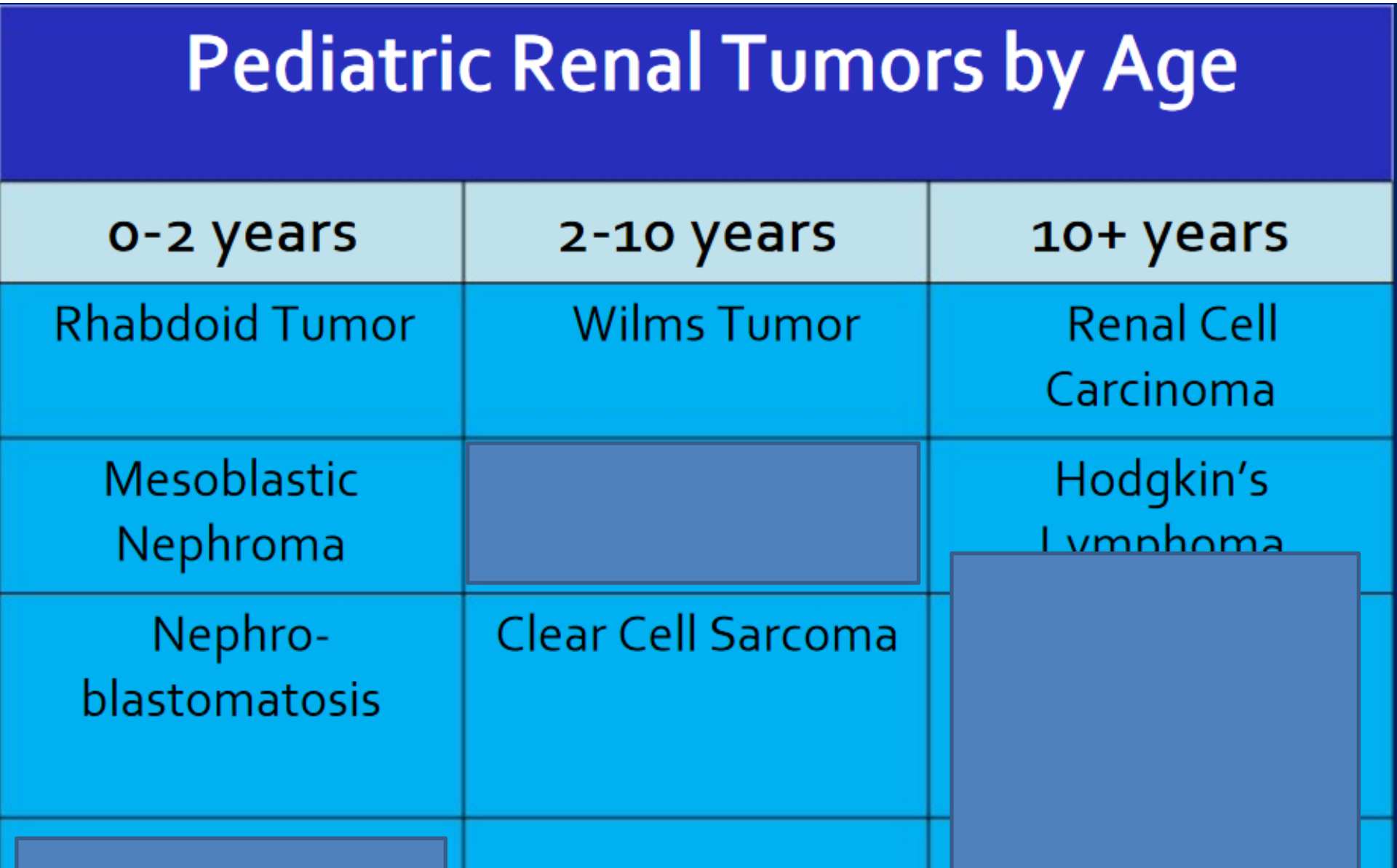
Good: triphasic

Bad: Anaplasia or Blastema.

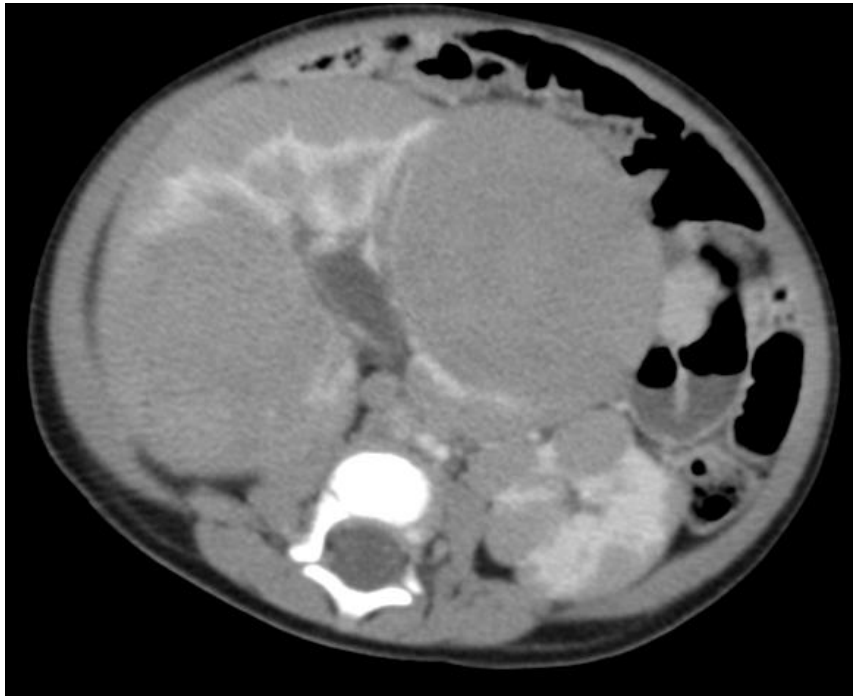


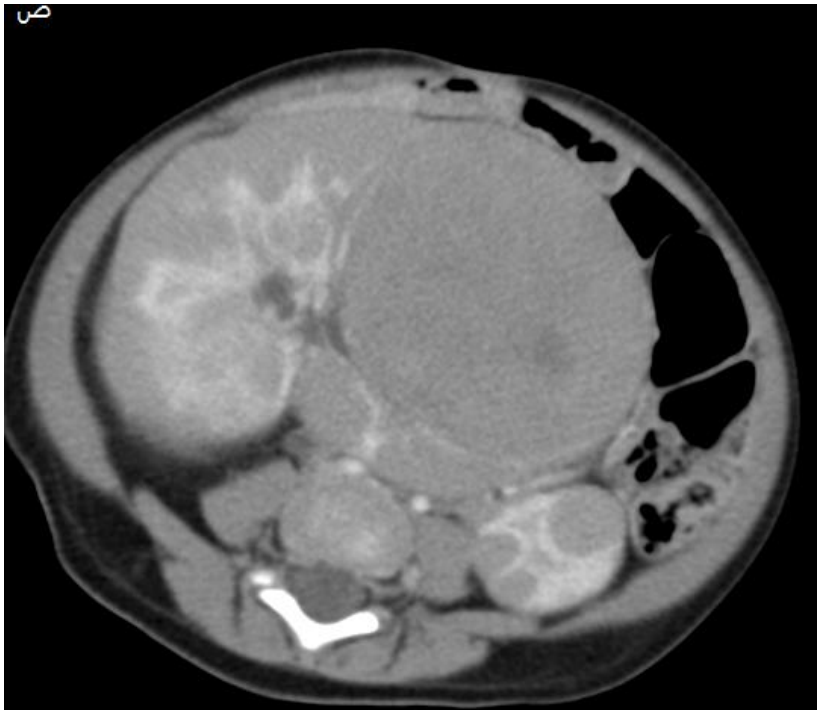


Kidney tumors

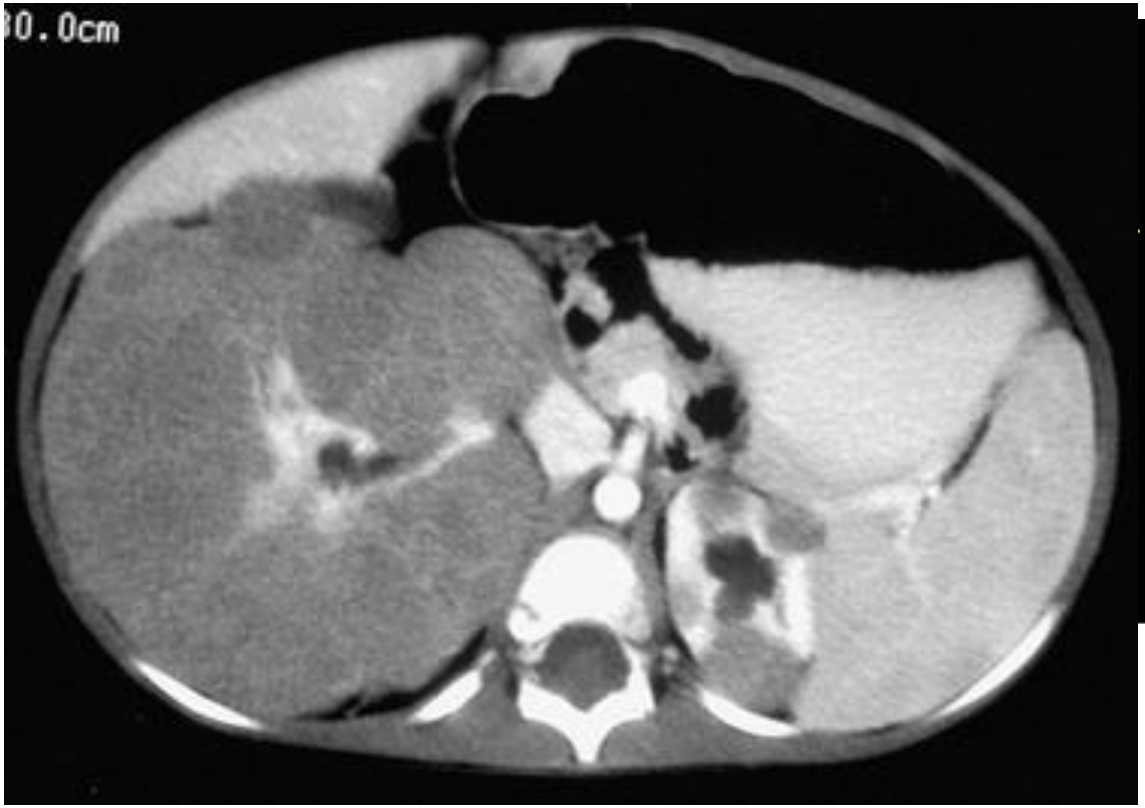


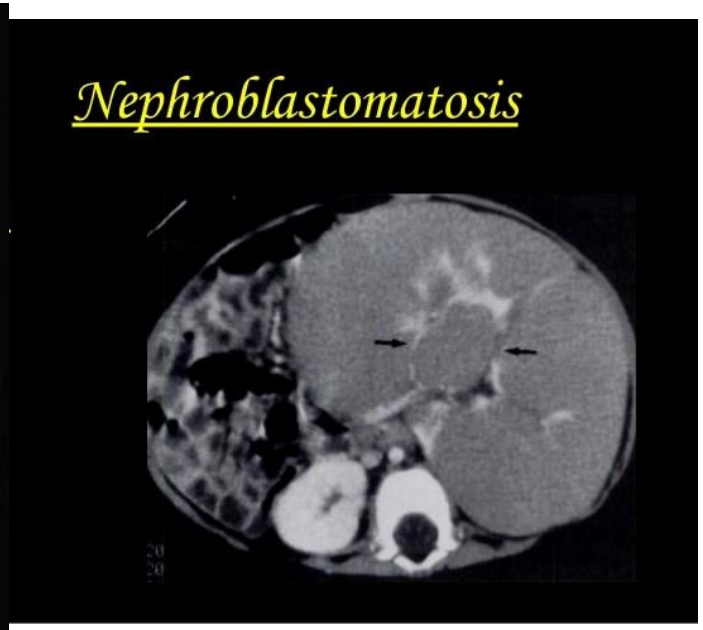
Ayah: Nephroblastomatosis



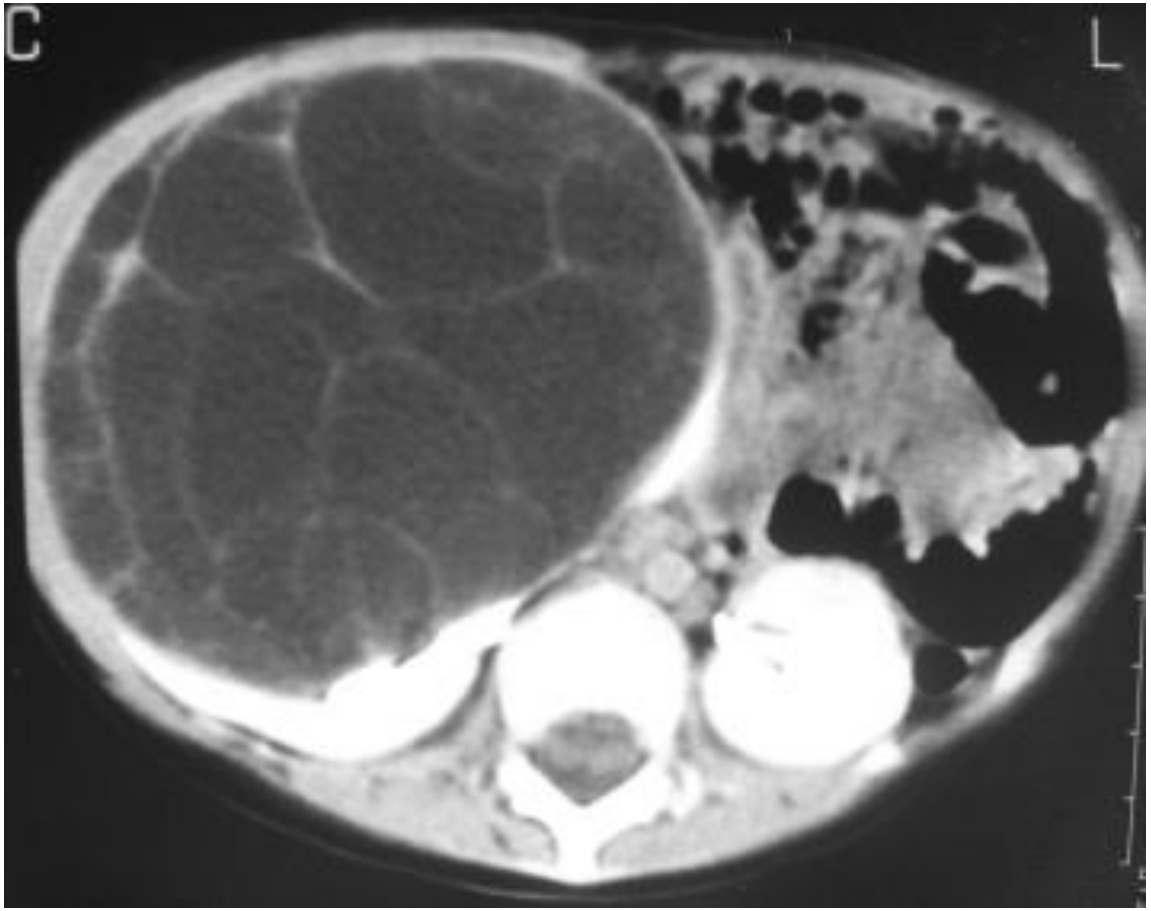


Nephroblastoimatosis



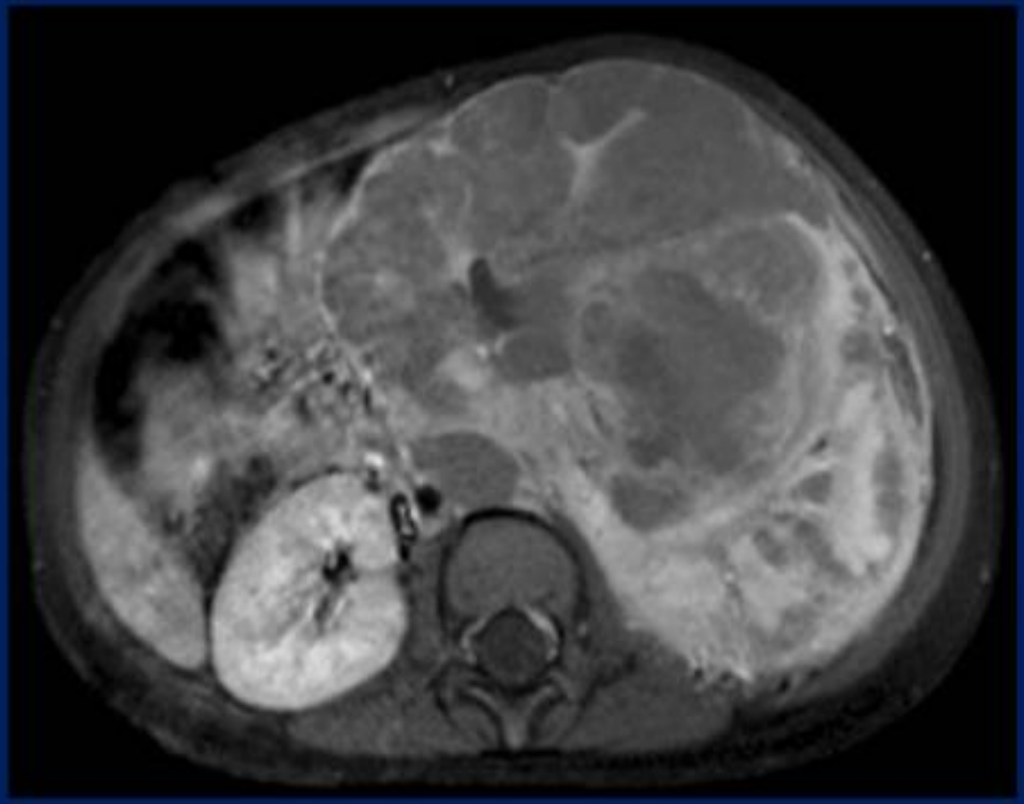


Mesoplastic nephroma

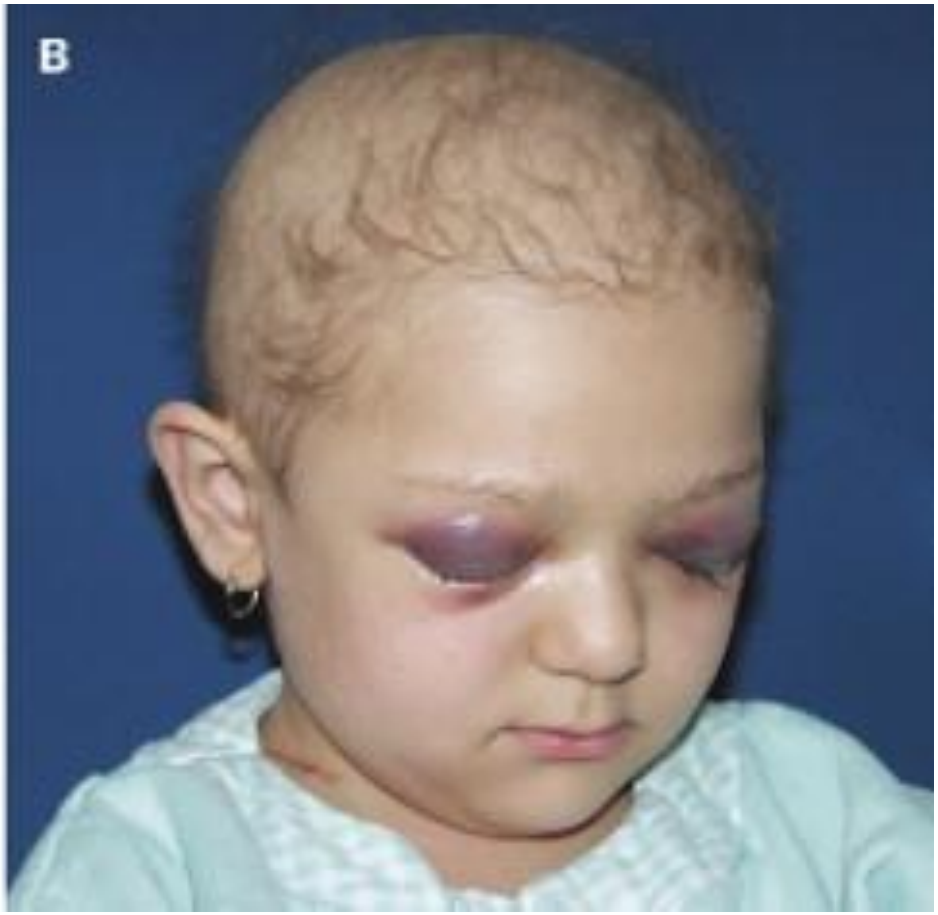


Rhabdoid Tumor

- 2% of childhood renal neoplasms
- Arises from renal medulla
- Mean age 16 months (usually < 3yrs)
- Synchronous CNS lesions (10%)
- ➢ Metastases
- ➢ Primary neuro-ectodermal tumor, typically posterior fossa



Diagnosis?



Neural crest Gives: peripheral neurons, enteric neurons and glia, melanocytes, Schwann cells, adrenal medulla.

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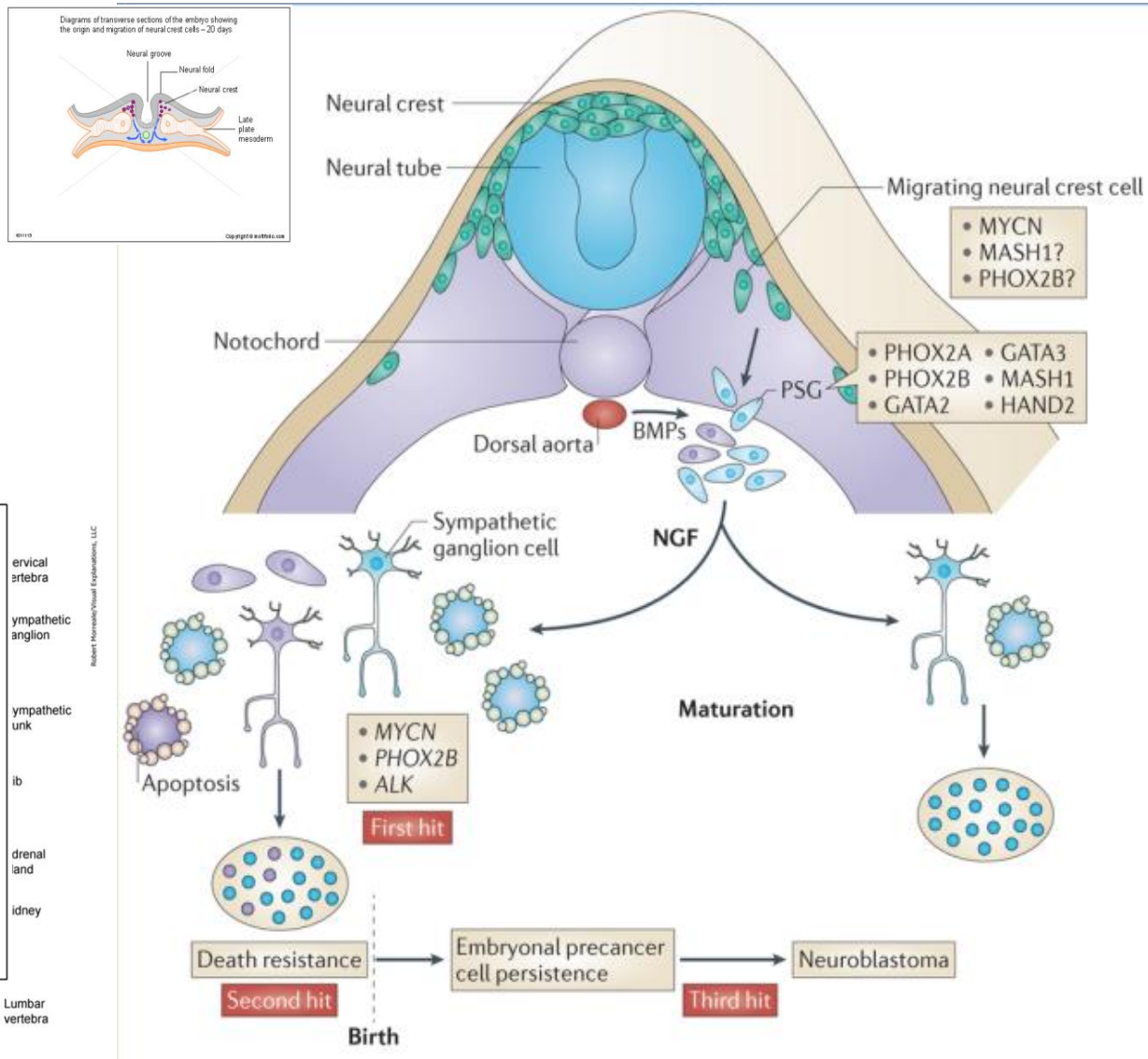
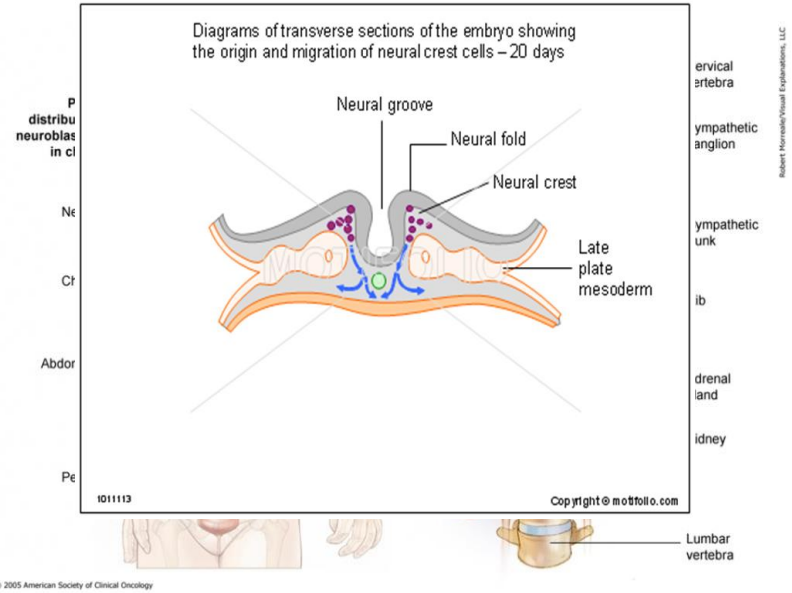
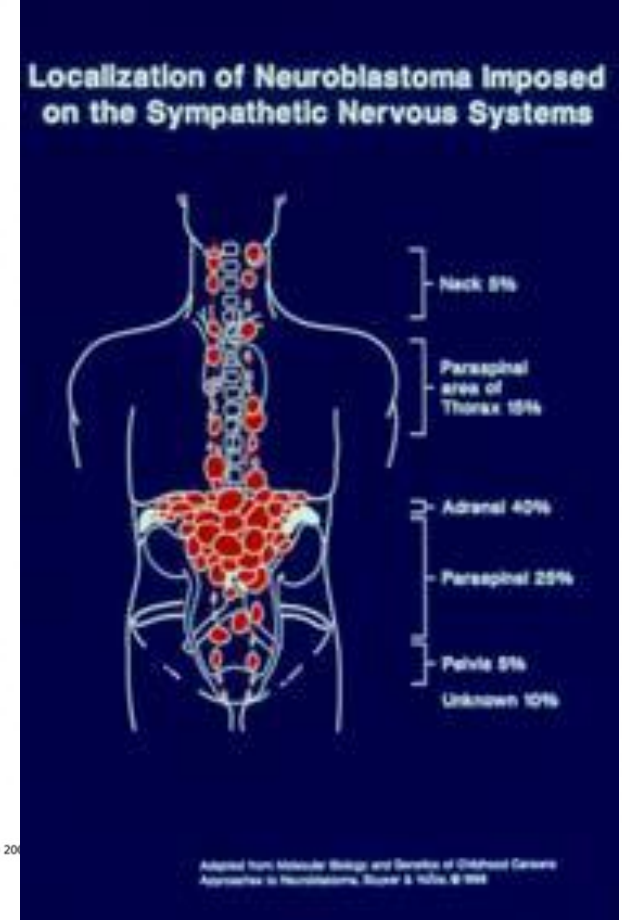
PHOX 2B : neuron cell diffrentiation 2 type of mutations:

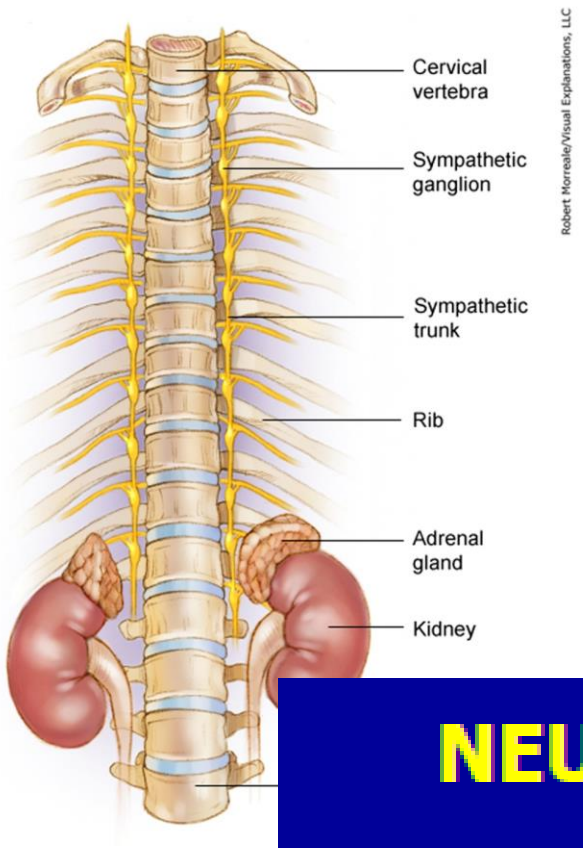
1- One lead to congenital central hypoventilation syndrom (CCHS).

2- Second type lead to NBS–Hirschsprung disease (HSCR)–CCHS association.









NEUROBLASTOMA

Origin

Post-ganglionic sympathetic neuroblasts

(primitive, pluripotential)

Paraspinal sympathetic ganglia

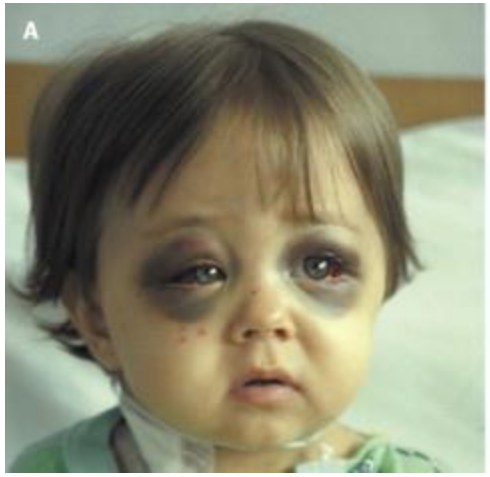
Adrenal chromaffin cells

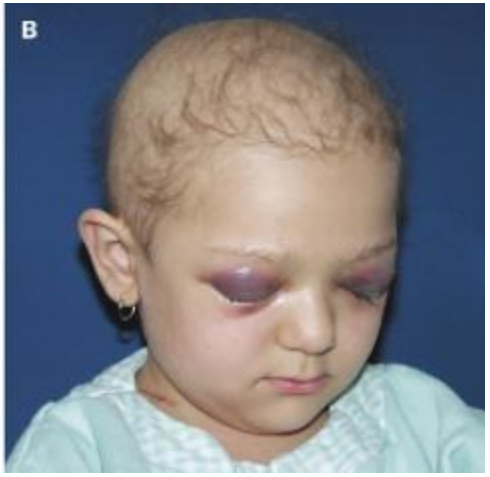
Markers

- Spot urine VMA/Creatinine:

<1y 27mg/gm cr
1-2y <18
2-4y <13
5-9y <8.5
10-14y <7
>15y 2-7 mg/24 hr

- Neuron specific Enolas :


A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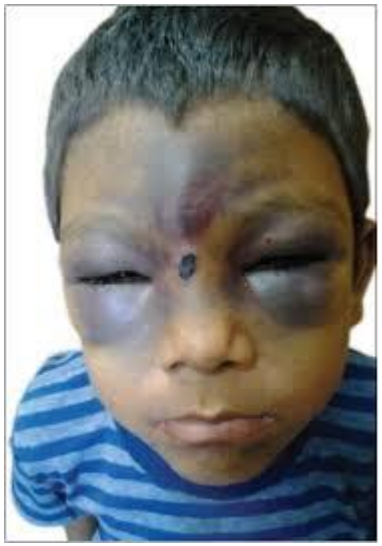
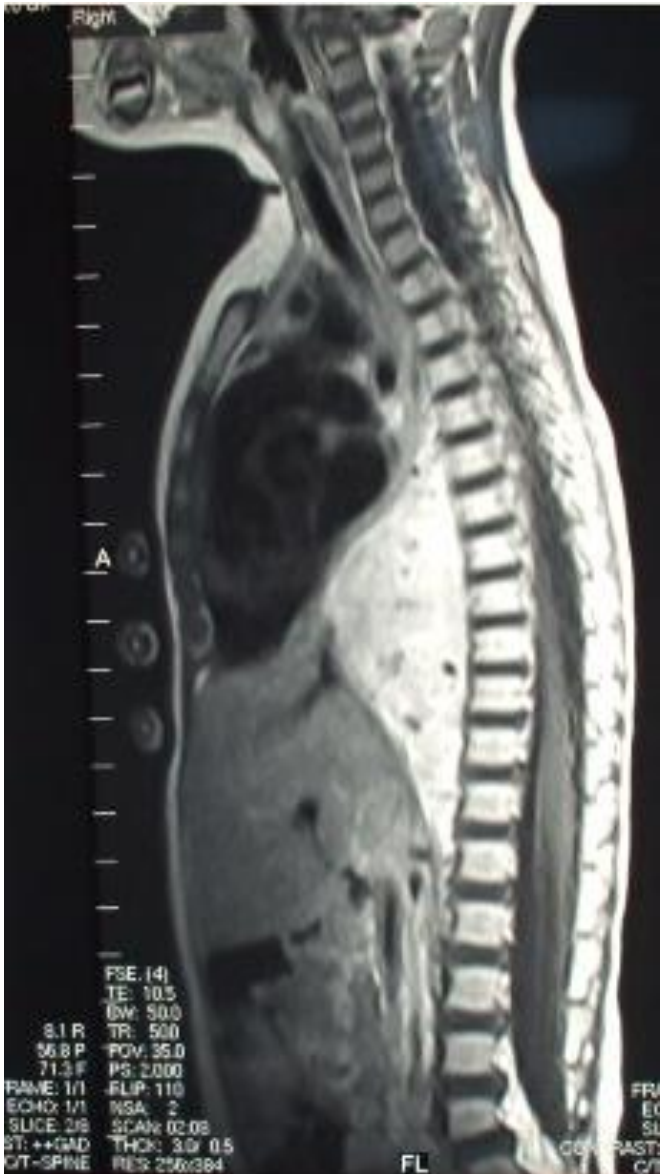
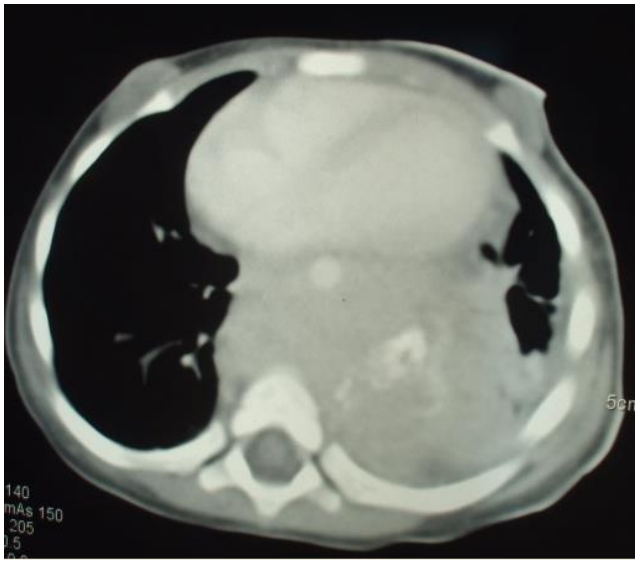
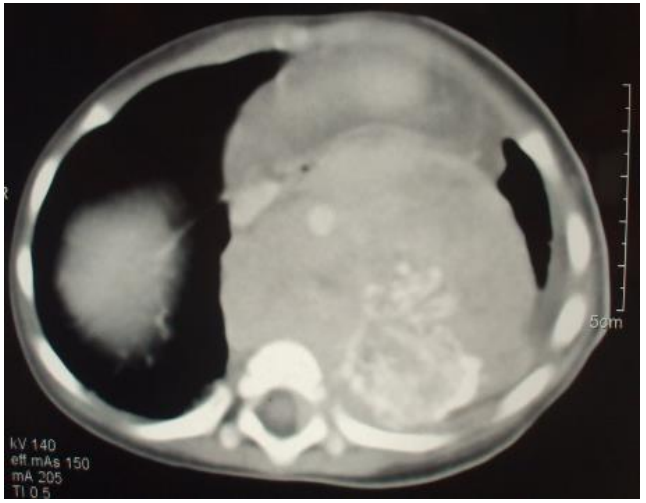


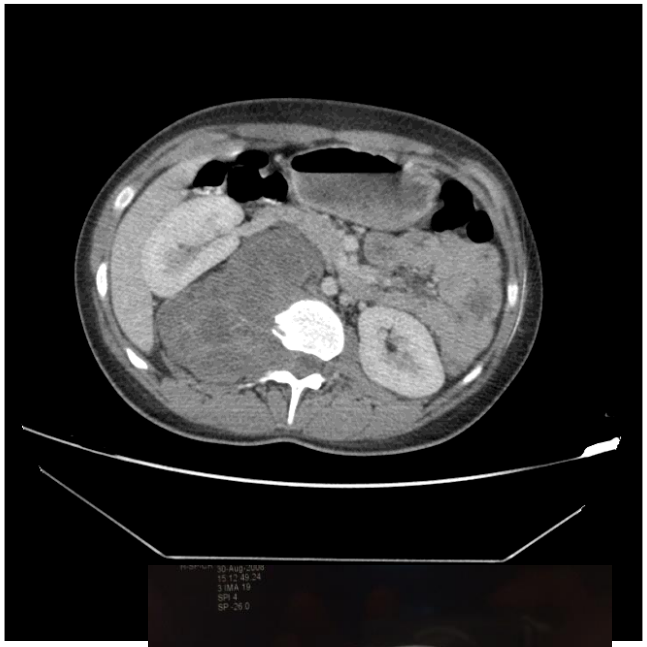
NBS Radiology :Luma,NBS, 5m

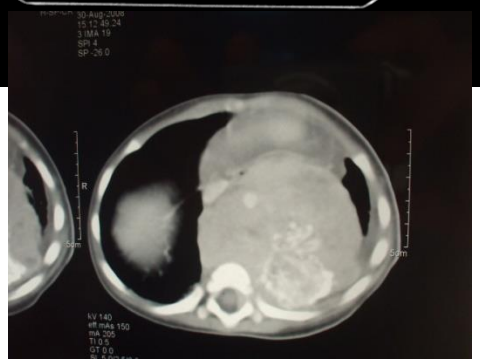


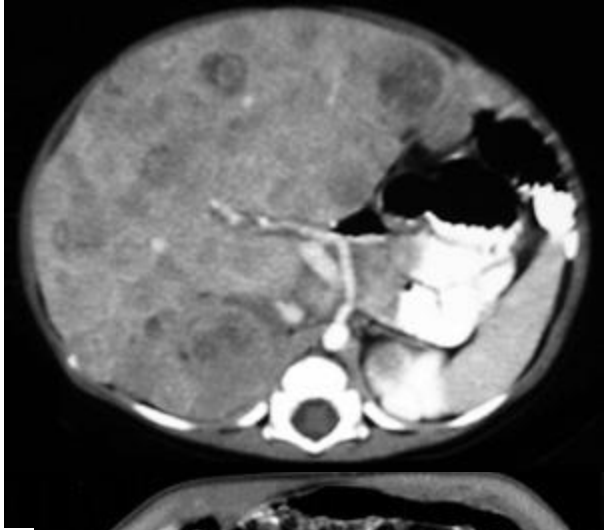


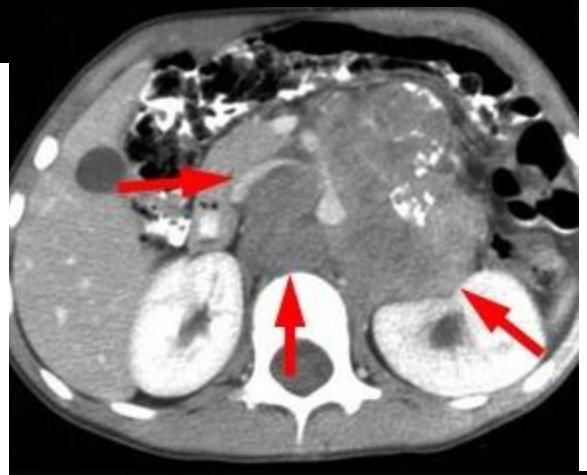


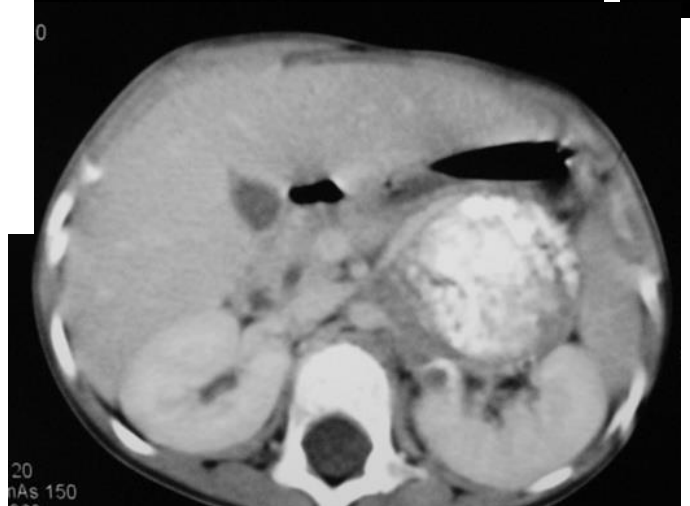
Radiological features

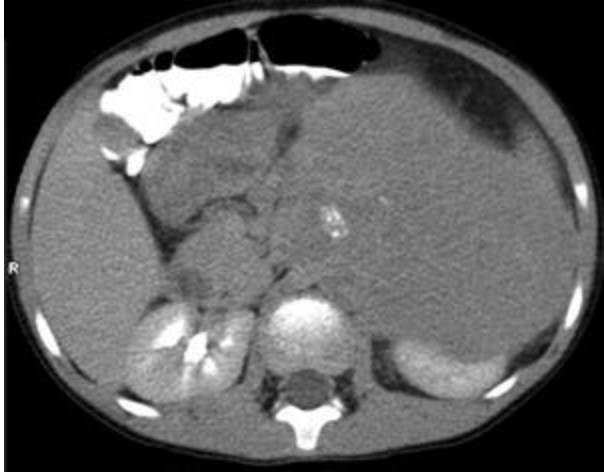


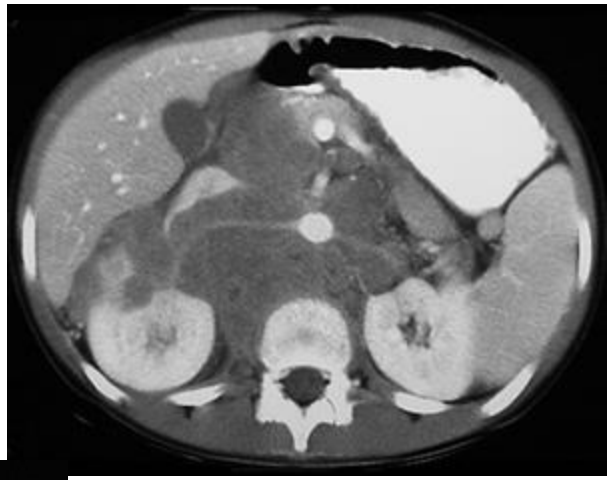


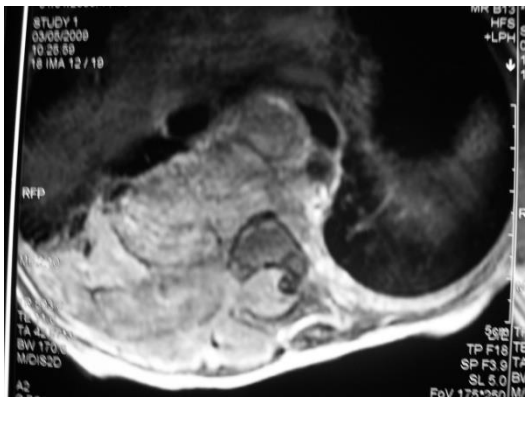




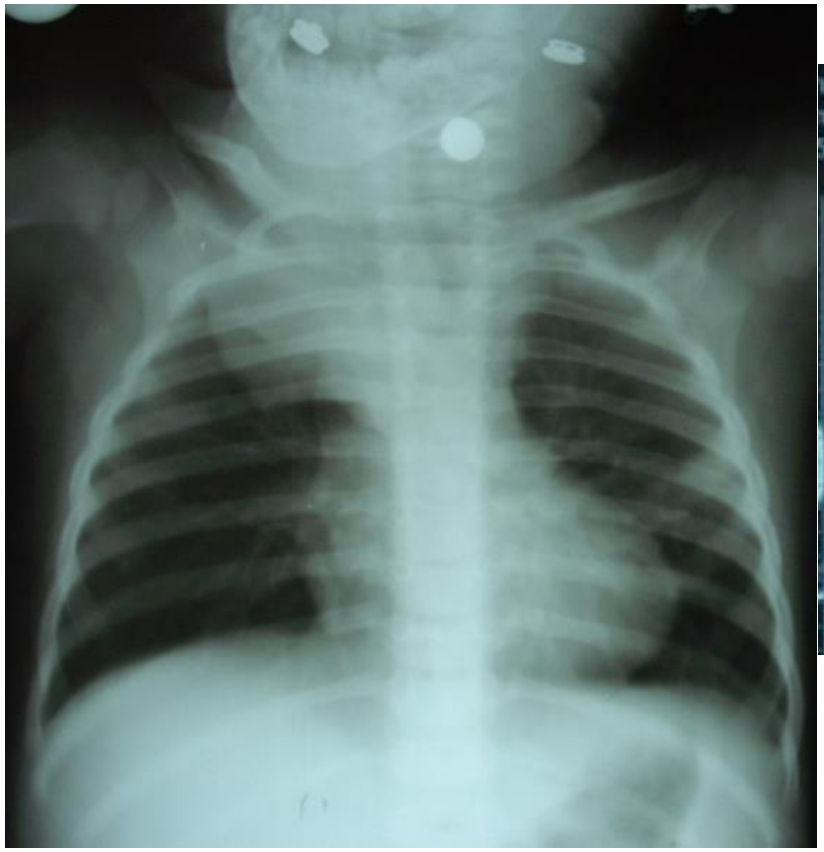


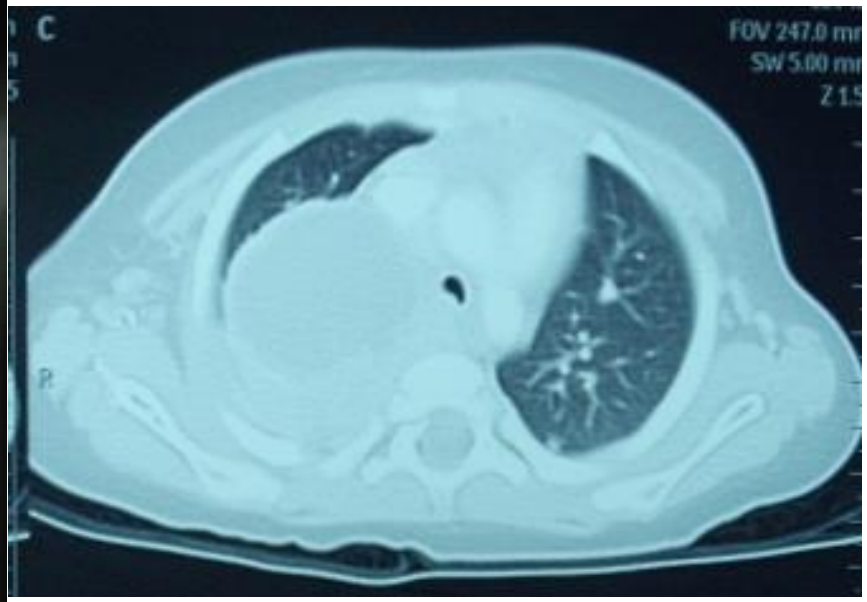




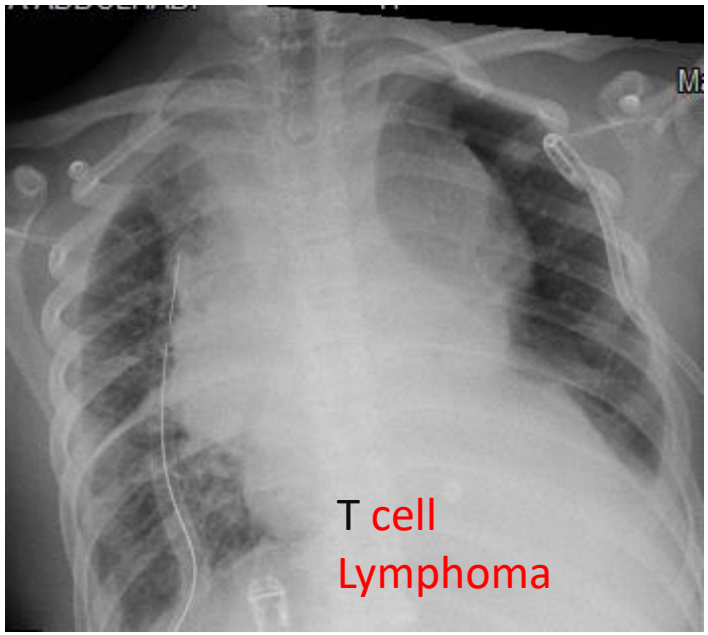


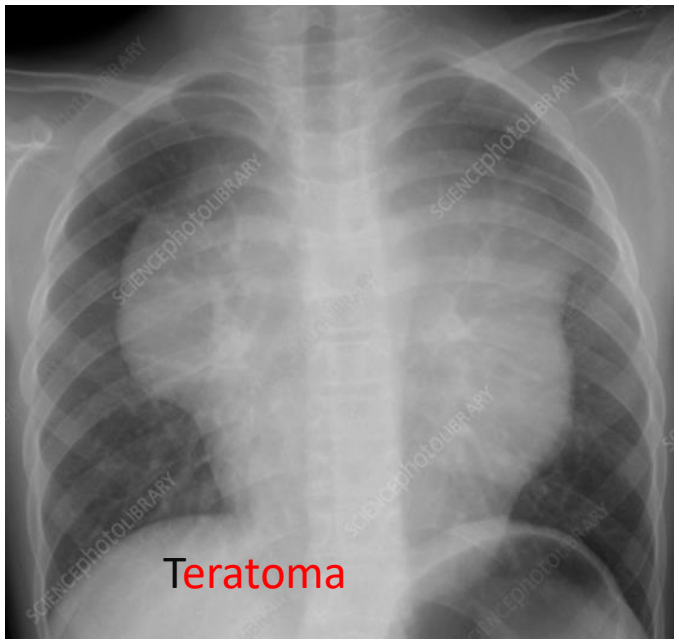
Nisreen 51292,NBS, 1.5y
Posterior mediastinal mass

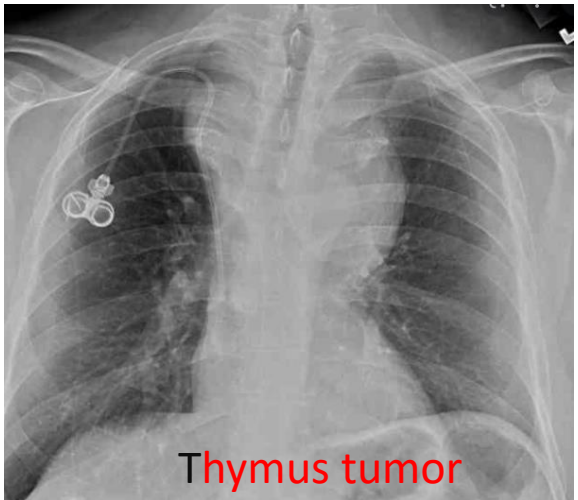


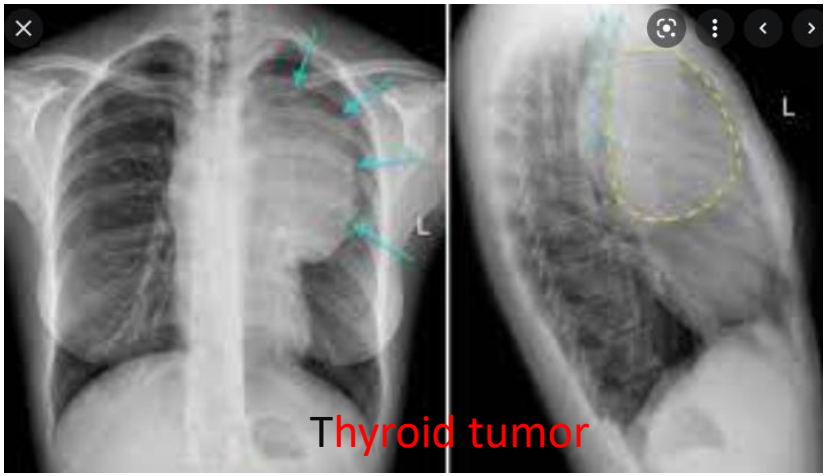


Anterior Mediastinal masses



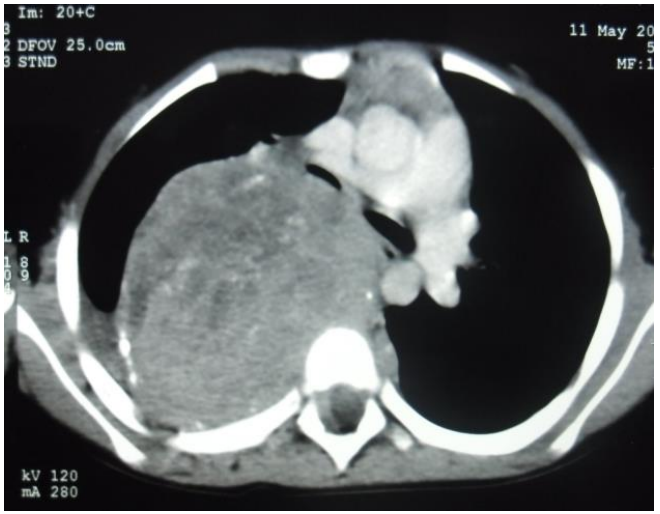


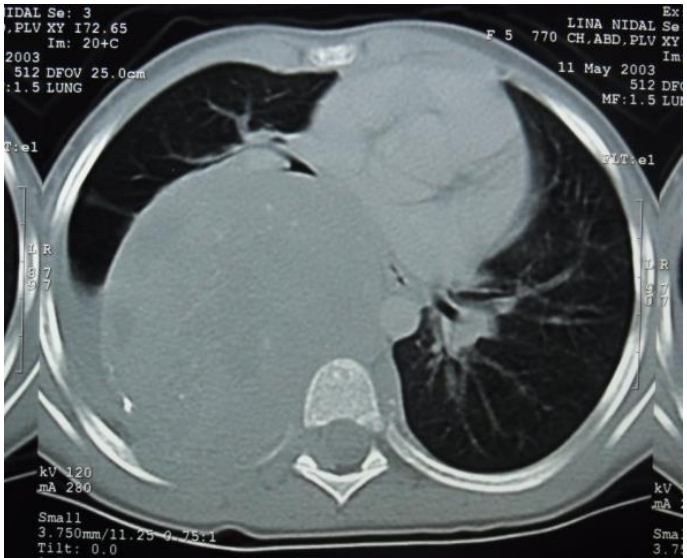




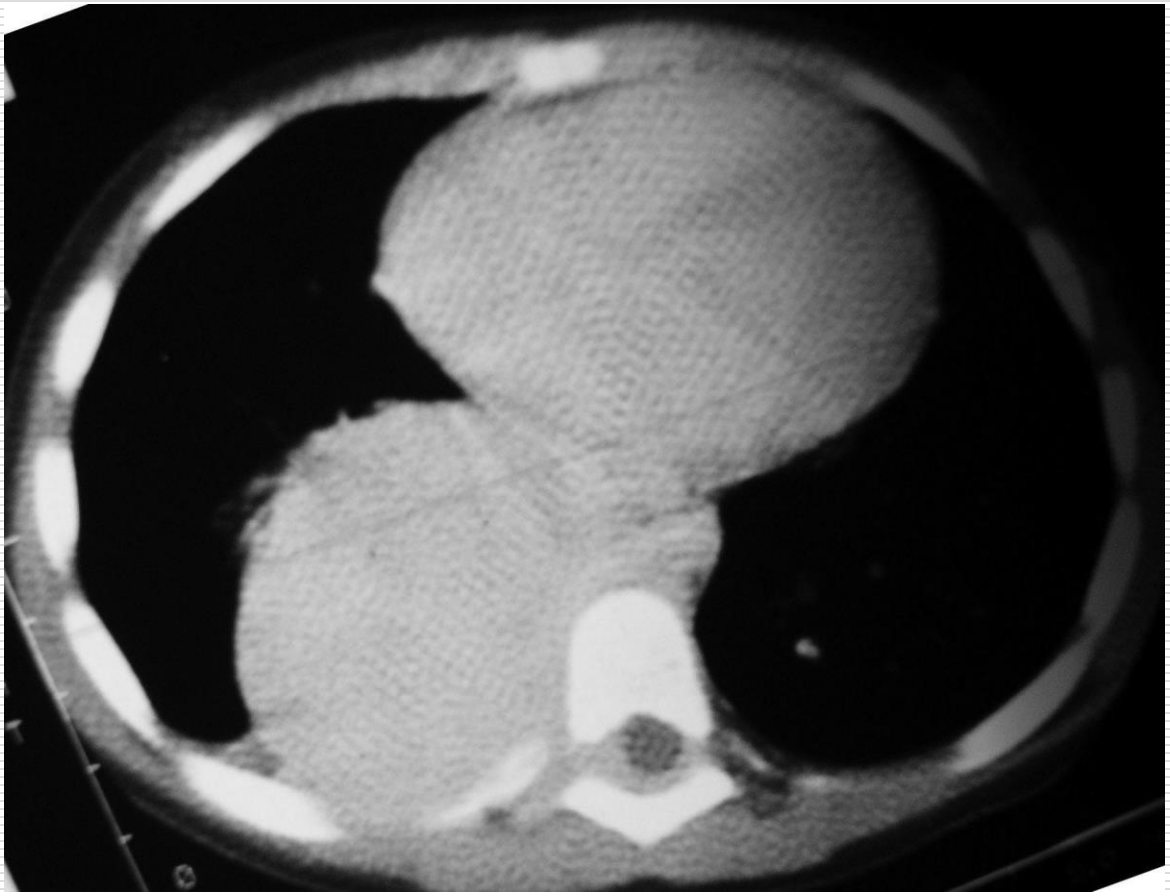
Lina, NBS

- 5 y. old female, stage 4 NBS, presented with Rt mediastinal maas.
- Calcifications, intraspinal extension.





Another pt. with cord compression.

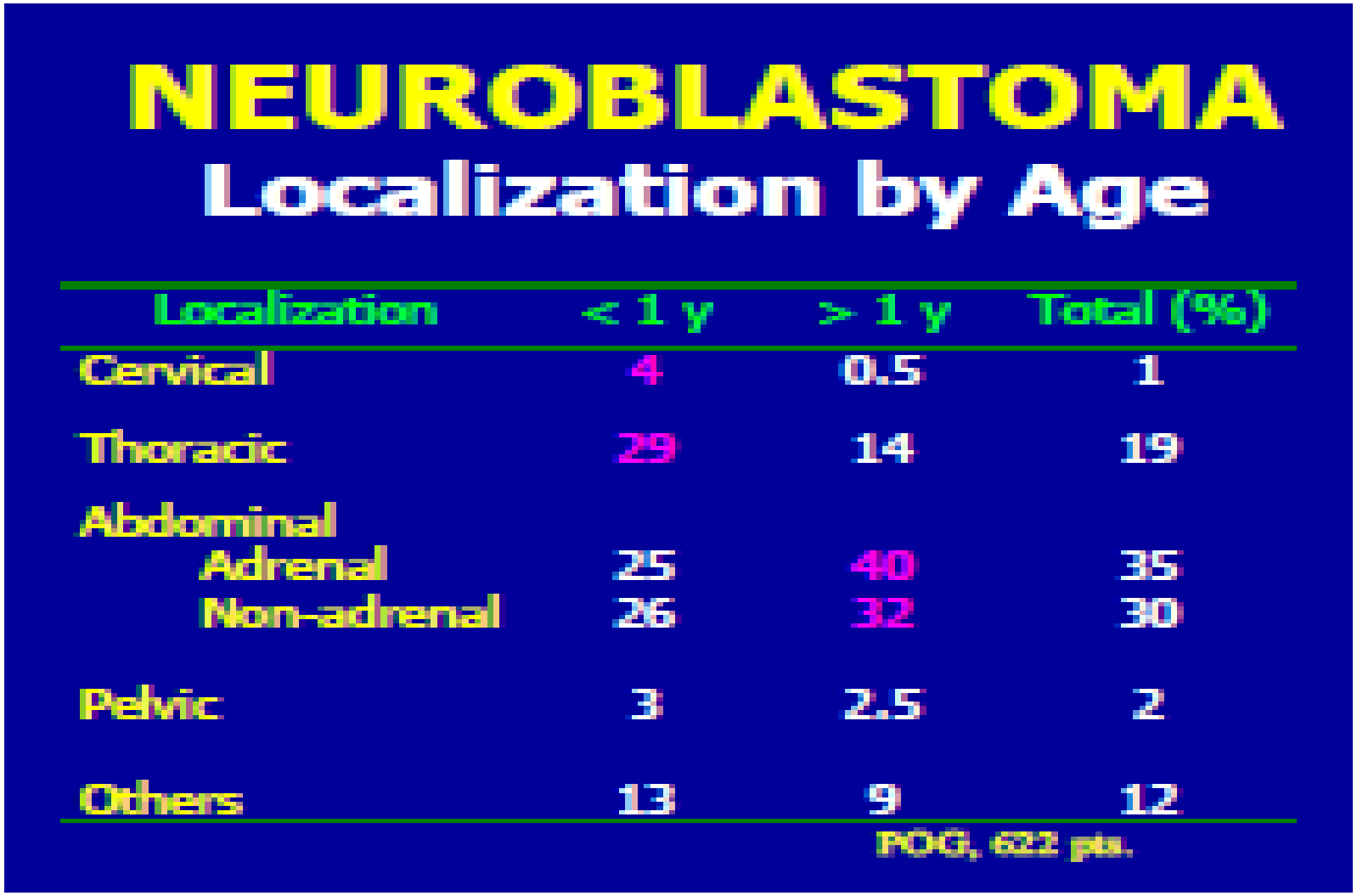


Neuroblastoma
Clinical Presentation

Location	Presentation
Abdomen	• Fullness, discomfort • Fixed, hard abdominal mass • Sudden enlargement (hemorrhage)
Thoracic	• Coincidentally in CXR • Respiratory symptoms, pain • Superior Vena Cava Syndrome • Horner syndrome
Cervical	• Cervical mass ? infection • Horner syndrome
Paraspinal (extension into neural foramina)	• Radicular pain • Paraplegia • Bladder/Bowel dysfunction

Prognostic Features

1-Age is very important for localization a



Age is very important for stage

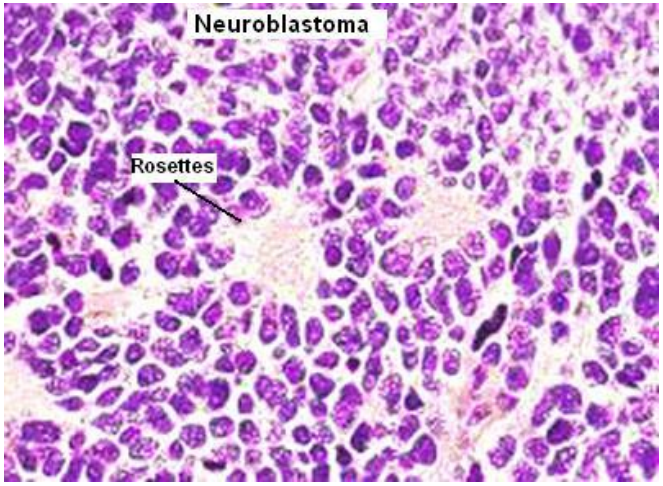
NEUROBLASTOMA

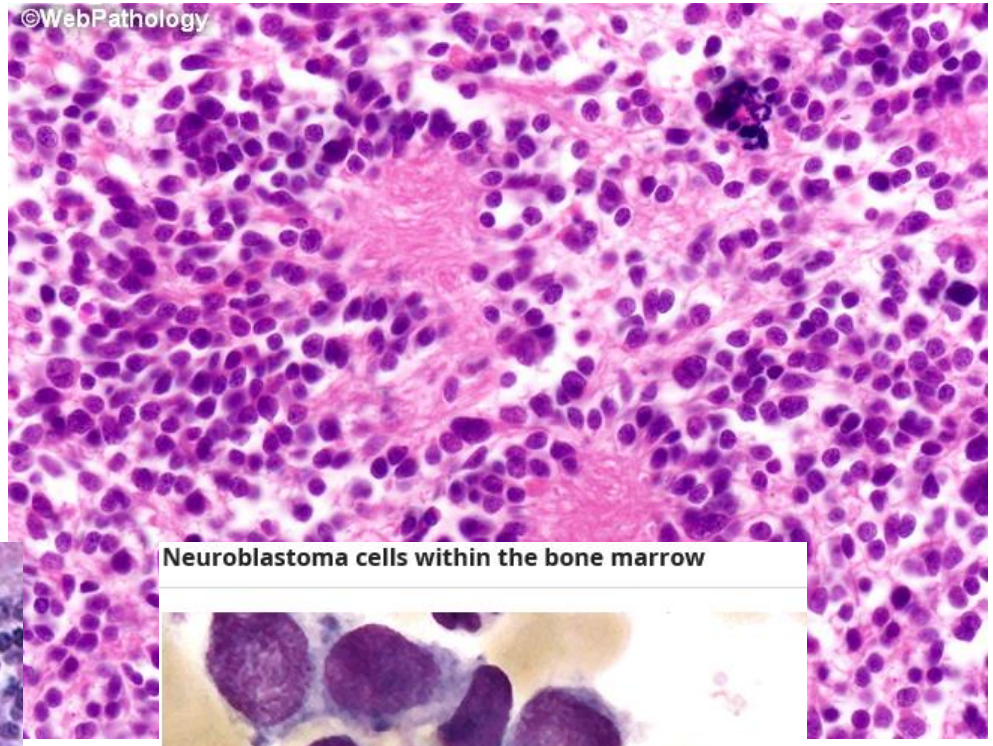
Stage at Diagnosis

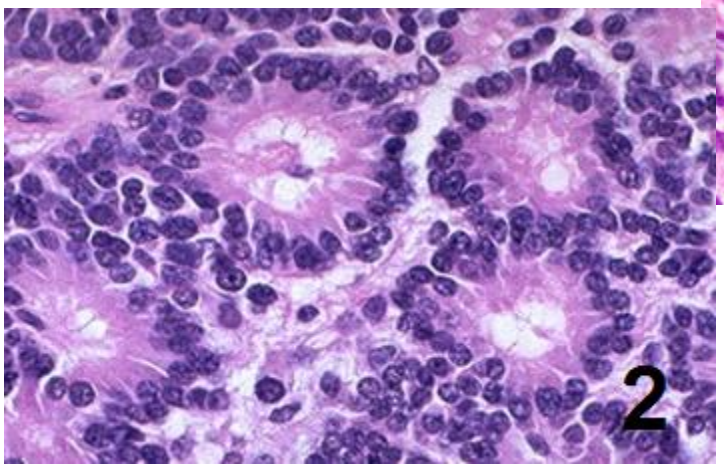
Stage at diagnosis	< 1 y. (%)	> 1 y (%)	Total (%)
Localized	39	19	26
Regional *Lymph Nodes*	18	13	15
Disseminated *Bone, Bone Marrow*	25	68	52
IV-S	18	0	7

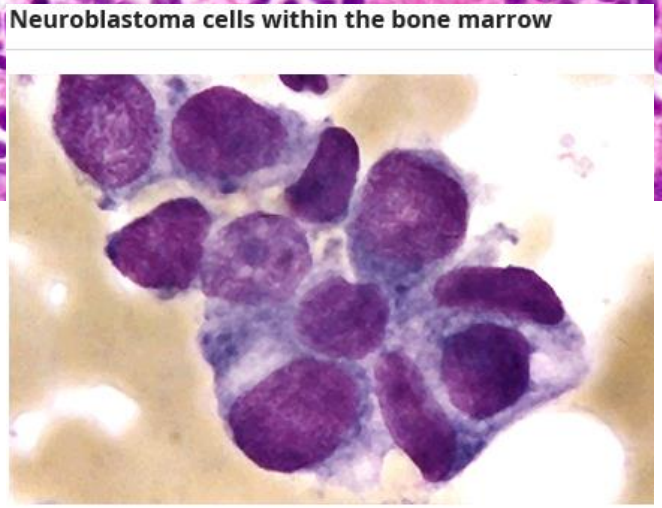
POG, 668 pts.

Typical Histological features. Roseate formation.

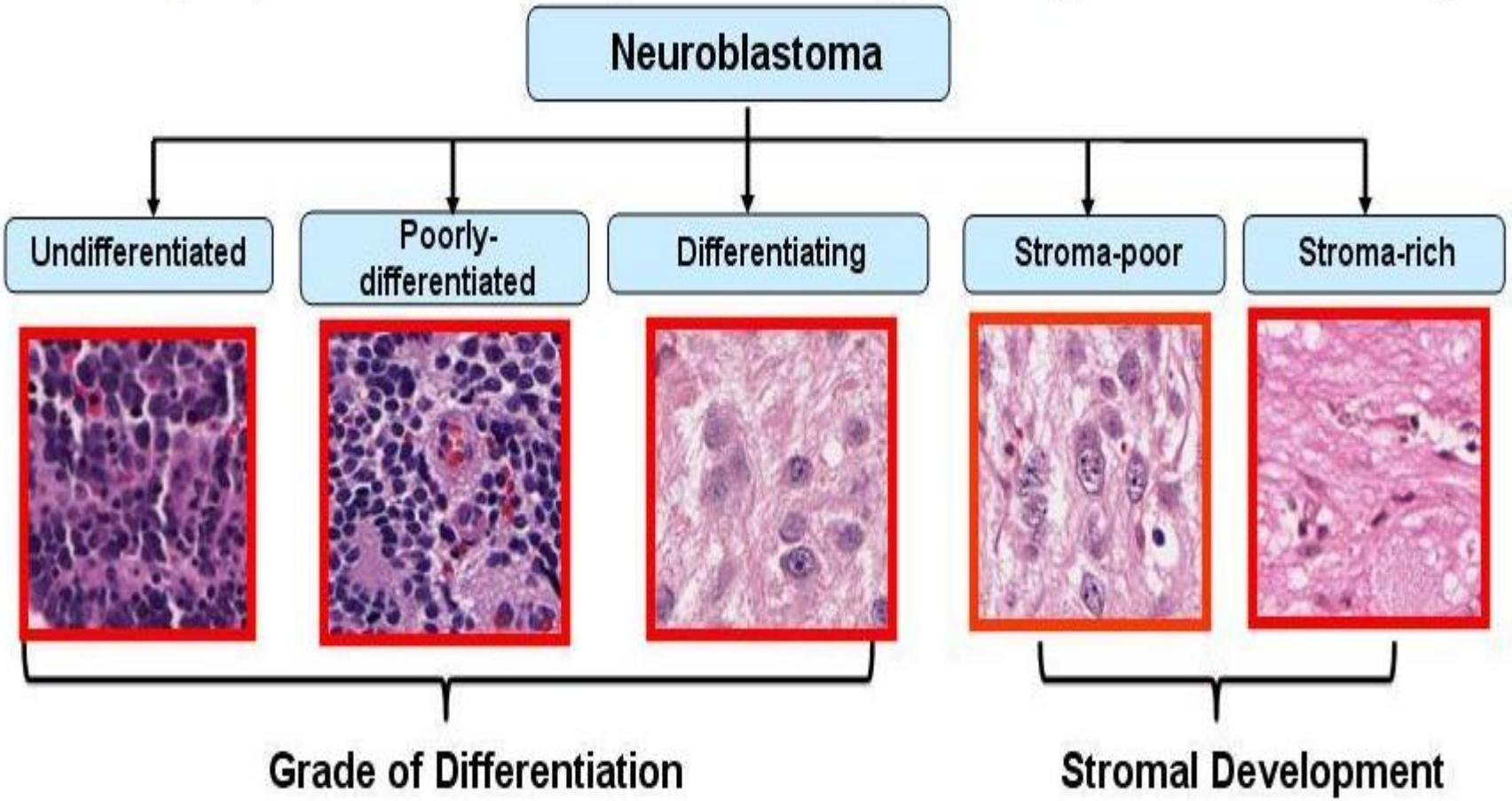


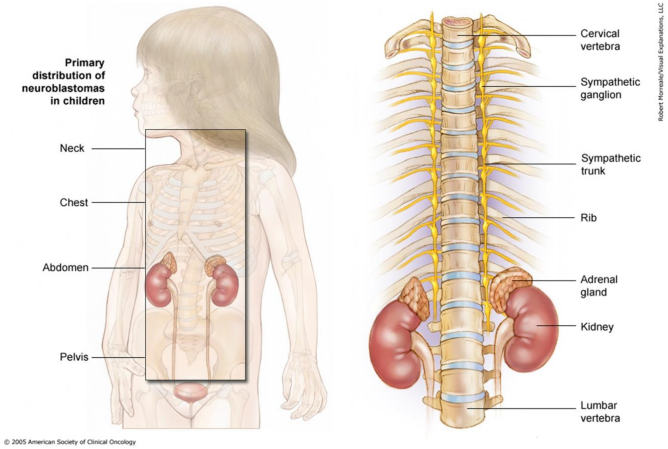




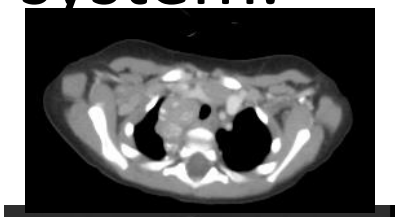


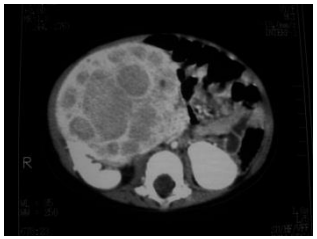
2-Histology : Shimada F vs UH

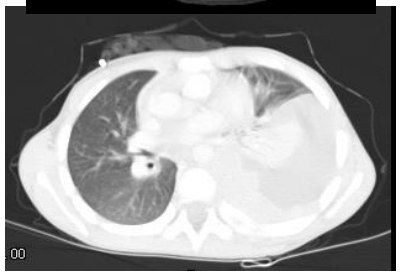


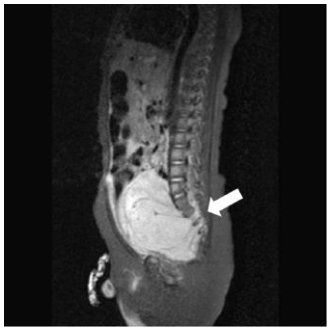


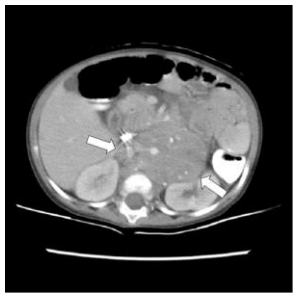
- Neuroblastomas can arise anywhere throughout the sympathetic nervous system.
- IN adrenal gland 40%,
- Abdominal 25%
- Thoracic 15%
- Cervical 5%
- Pelvic 5%



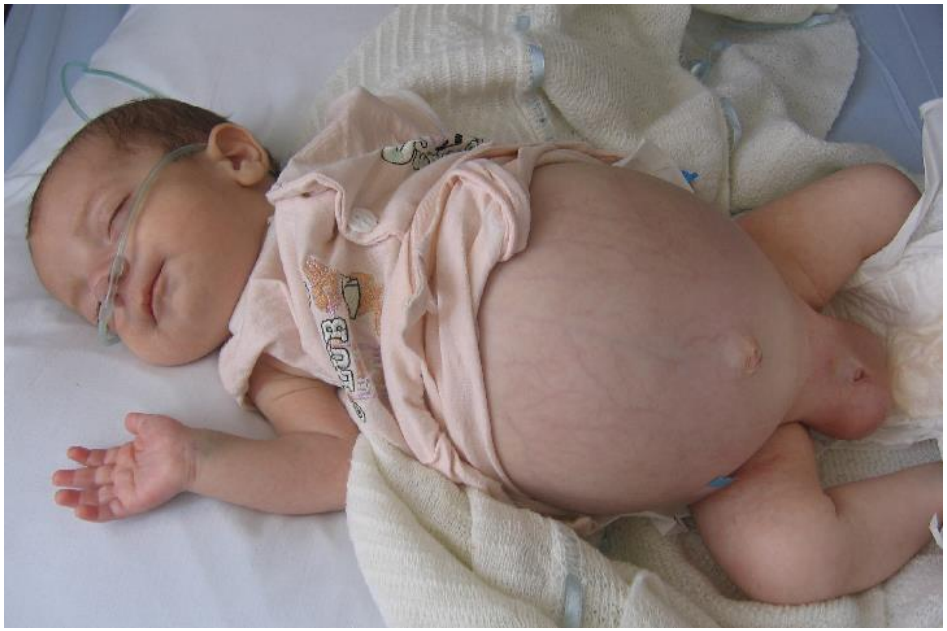


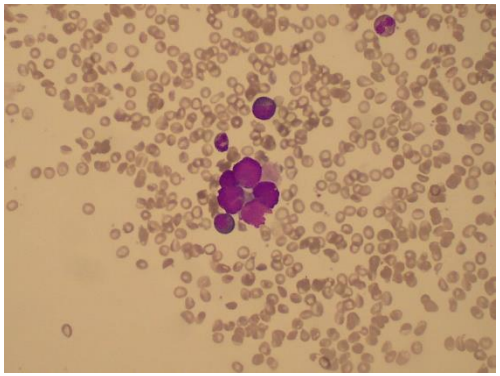


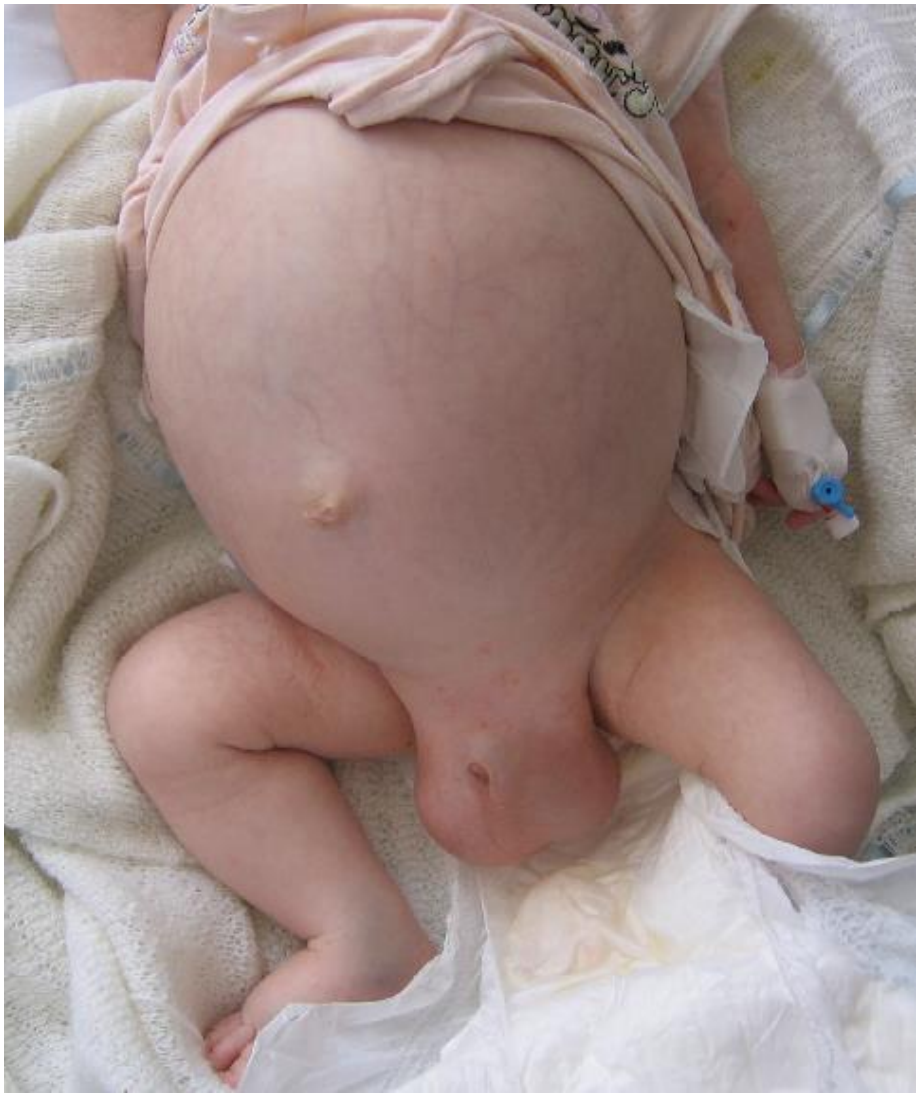


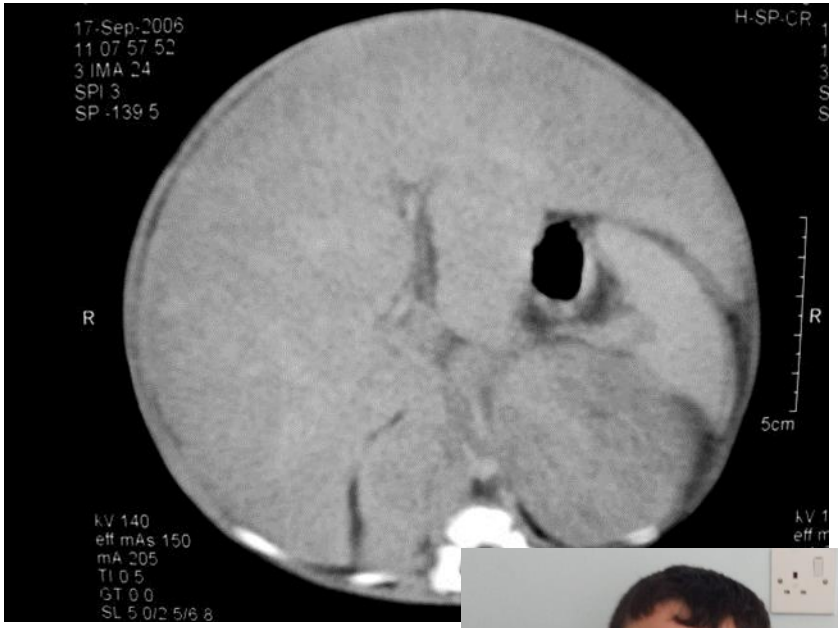


AGE <1year/ N-MYC UA





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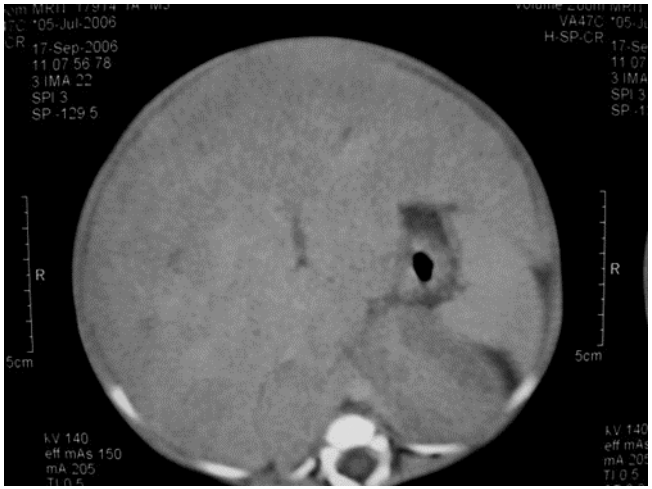
3 IMA 24
SPI 3
SP -139 5
H-SP-CR
R
R
5cm
kV 140
eff mAs 150
mA 205
TI 0 5
GT 0 0
SL 5 0/2 5/6 8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17-Sep-2006
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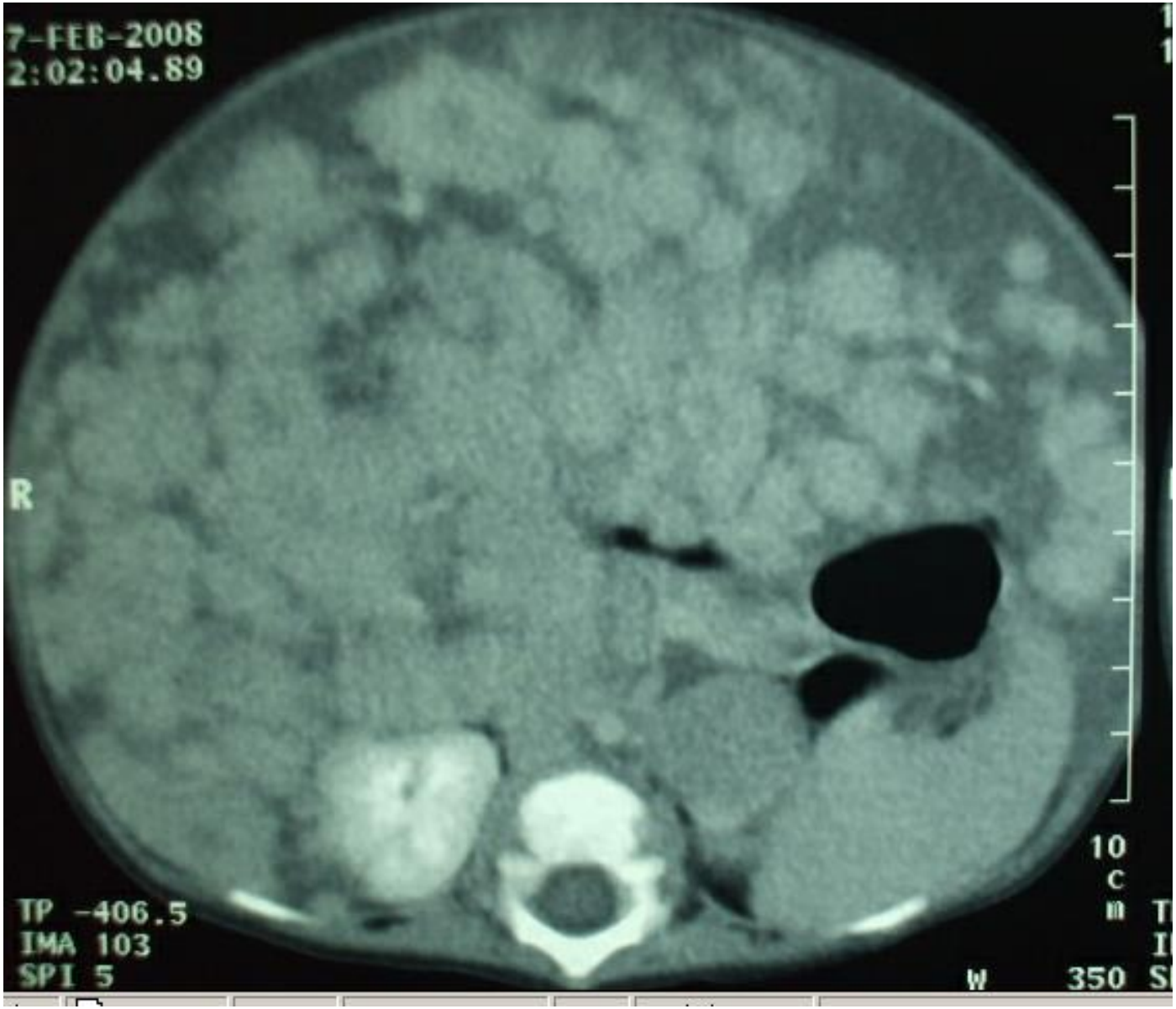
3 IMA 22
SPI 3
SP -129 5
H-SP-CR
R
R
5cm
5cm
kV 140
eff mAs 150
mA 205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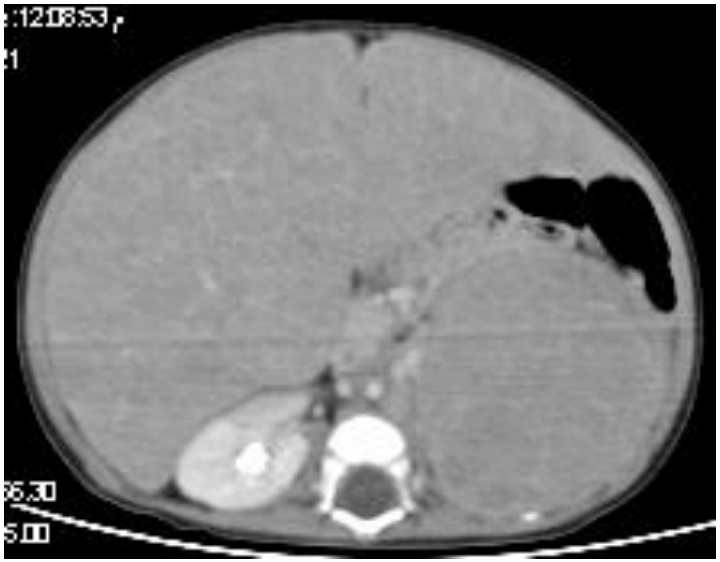
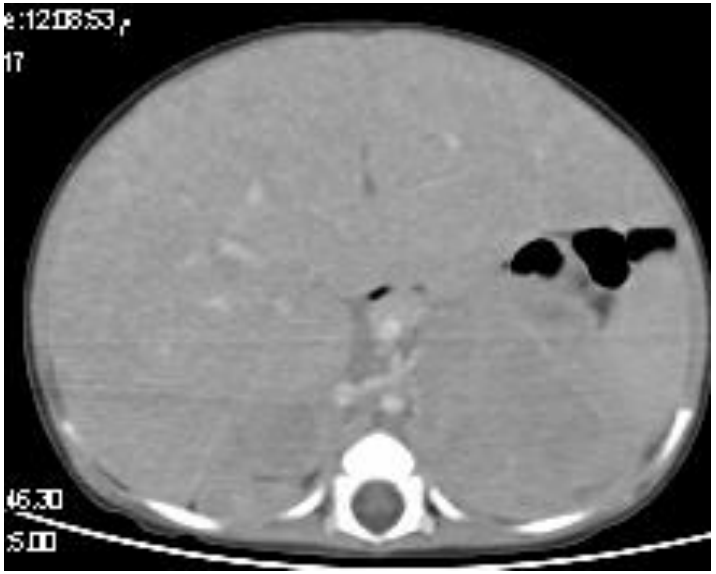
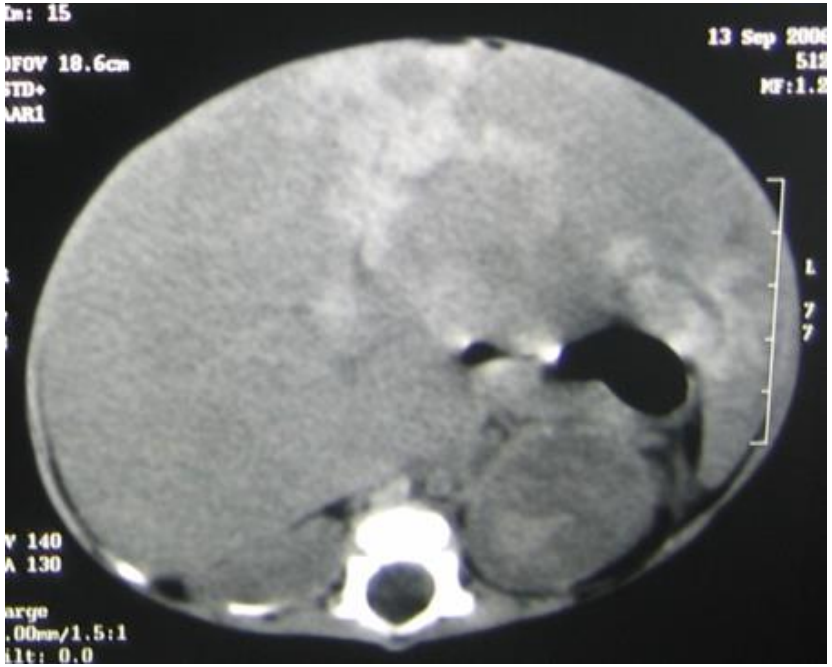
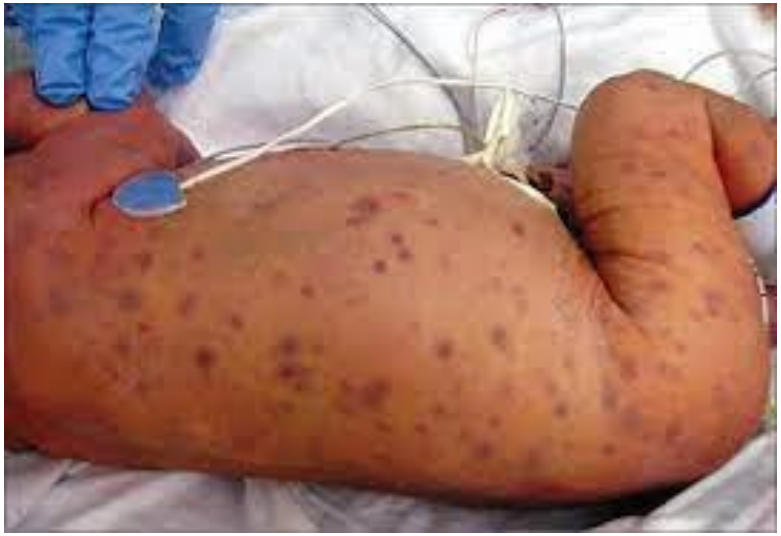


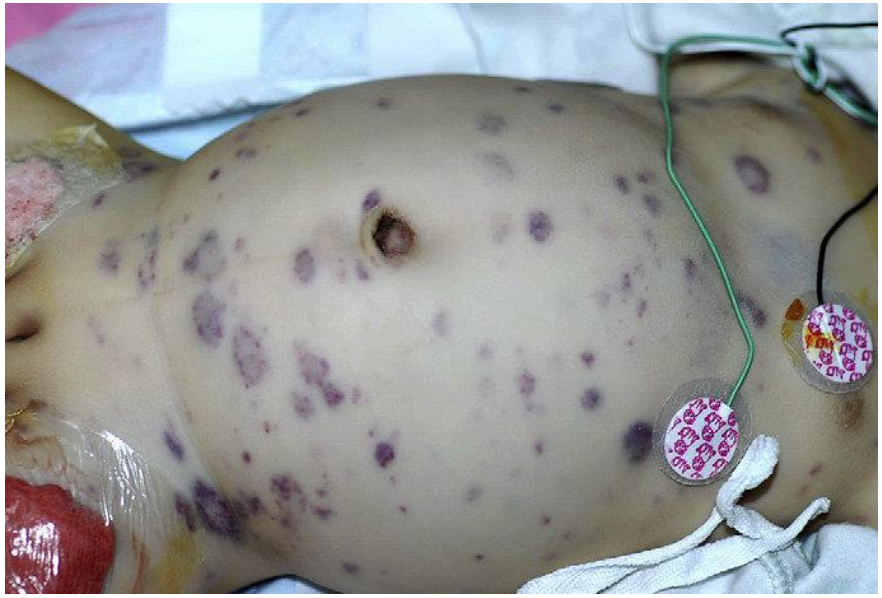


Ayham

Farah







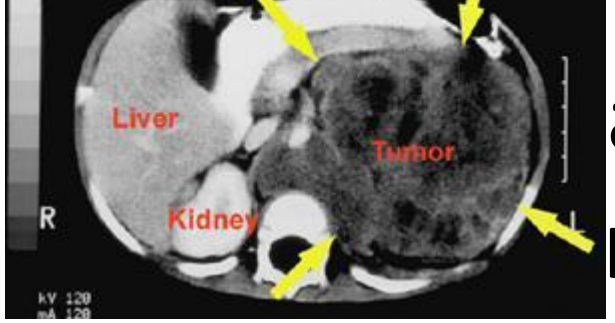

Dermatology Oasis

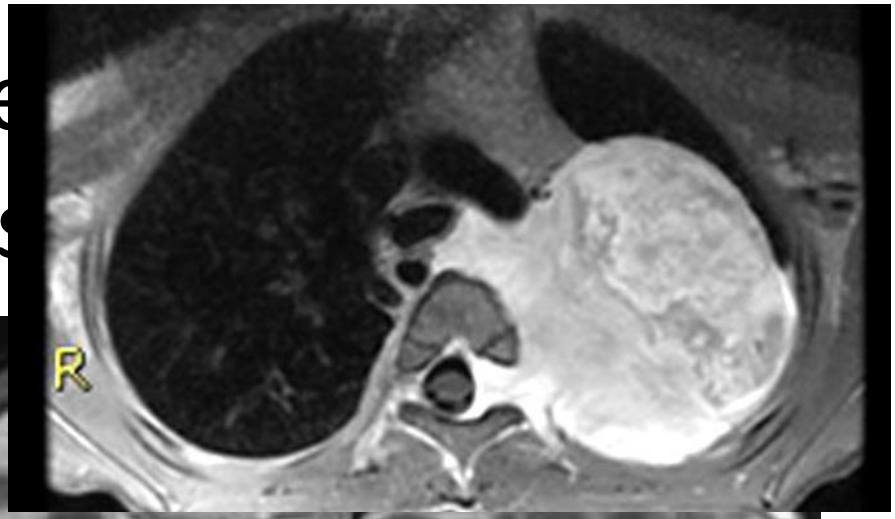

Stage 4S Neuroblastoma
Age 3 months

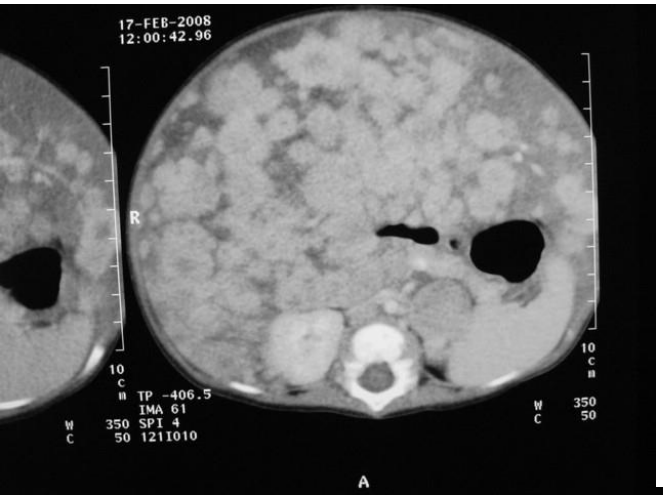
Neuroblastoma IV-S

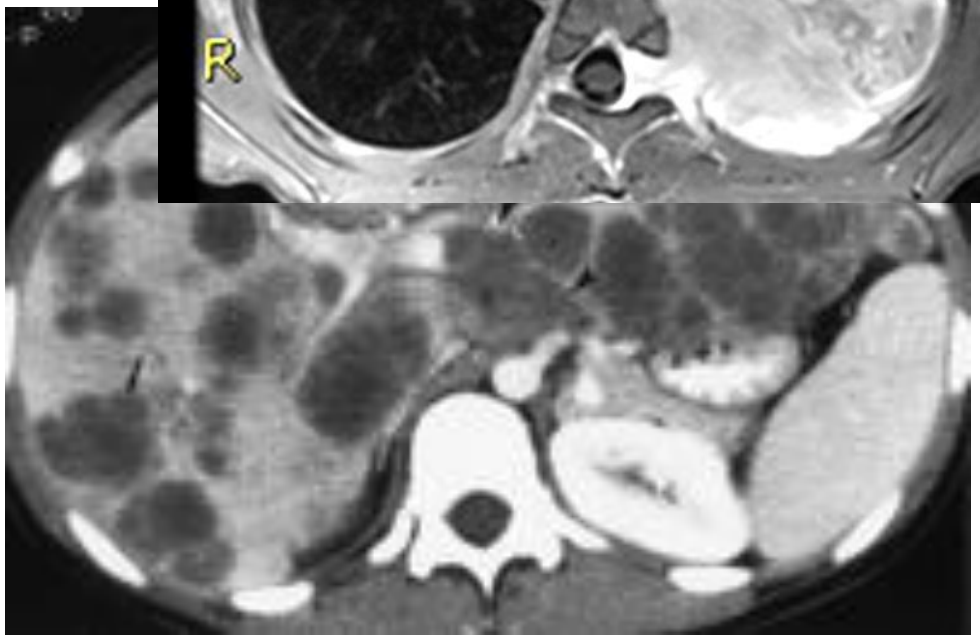
- **Infants with small primary tumors (*stage I or II*)**
- **Distant metastases:**
  - **Liver**
  - **Skin (*blueberry muffin*)**
  - **Bone Marrow**
  - **Absence of bone metastases**
- **Excellent prognosis with minimal or no therapy**

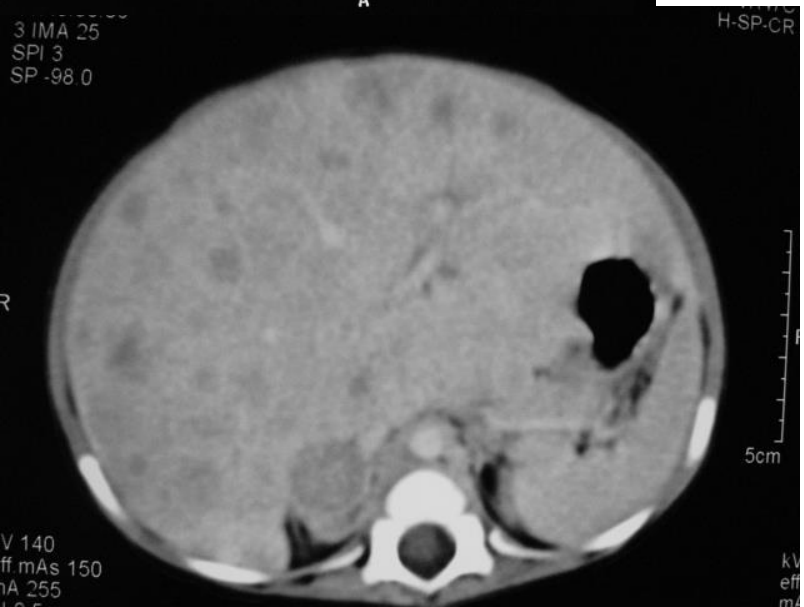
aneous re
neuroblas

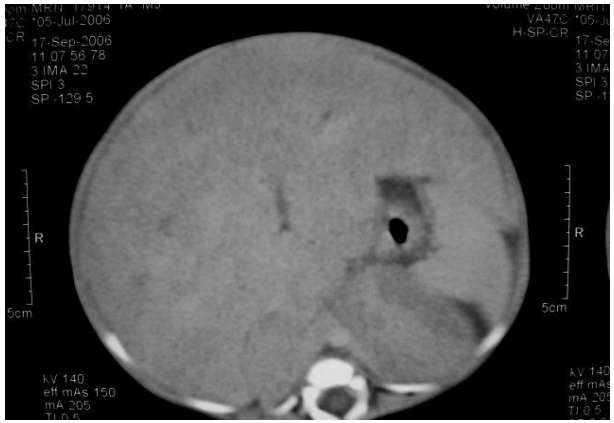




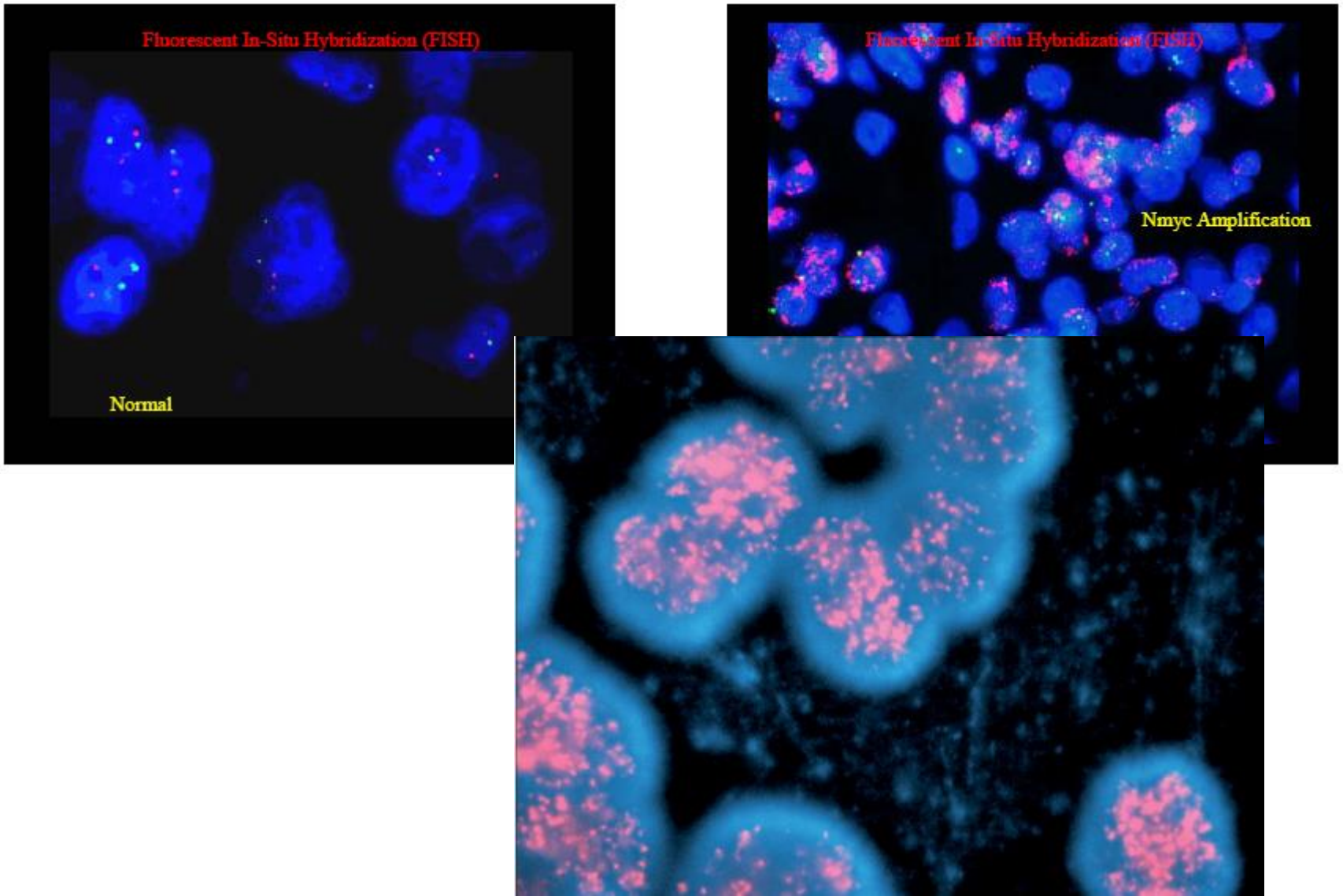








FISH for N-MYC gene on Short arm of chromosome 2



Prognostic Factors in Neuroblastoma

- Age
- Stage
- Biologic Characteristics:
  - *N-MYC* amplification
  - DNA index (ploidy)
  - 1p-, 17q+
  - Receptor expression: TRK-A,B,C
- Histologic Characteristics

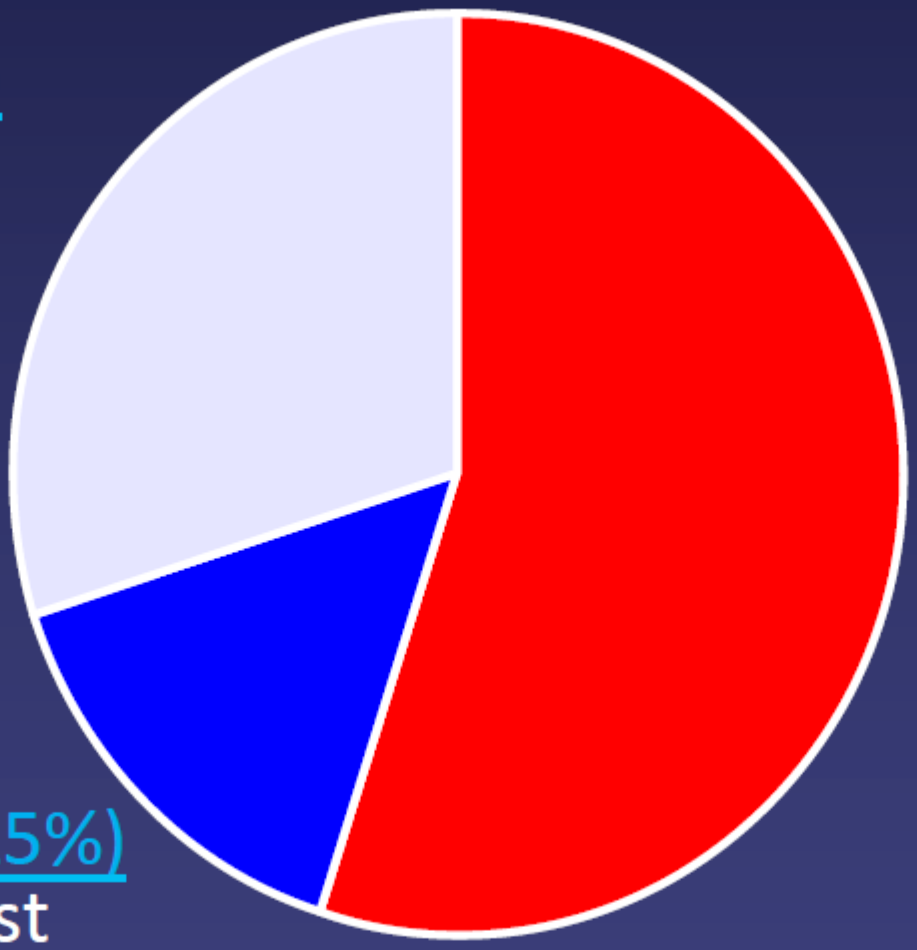
Risk Groups of NBS

INSS Stage	Age	MYCN Status	Shimada Histology	DNA Ploidy	Risk Group
1	0 - 21 y	Any	Any	Any	Low
2A/2B*	< 365 d	Any	Any	Any	Low
	≥ 365 d-21 y	Non-Amp	Any	-	Low
	≥ 365 d-21 y	Amp	Fav	-	Low
	≥ 365 d-21 y	Amp	Unfav	-	High
3**	< 365 d	Non-Amp	Any	Any	Intermediate
	< 365 d	Amp	Any	Any	High
	≥ 365 d-21 y	Non-Amp	Fav	-	Intermediate
	≥ 365 d-21 y	Non-Amp	Unfav	-	High
	≥ 365 d-21 y	Amp	Any	-	High
4	< 365 d	Non-Amp	Any	Any	Intermediate
	< 365 d	Amp	Any	Any	High
	≥ 365 d-21 y	Any	Any	-	High
4S	< 365 d	Non-Amp	Fav	> 1	Low
	< 365 d	Non-Amp	Any	= 1	Intermediate
	< 365 d	Non-Amp	Unfav	Any	Intermediate
	< 365 d	Amp	Any	Any	High

Based on age, stage, N-MYC status, ploidy, 1p and 11q LOH

Low Risk (30%)

Benign course



High Risk (55%)

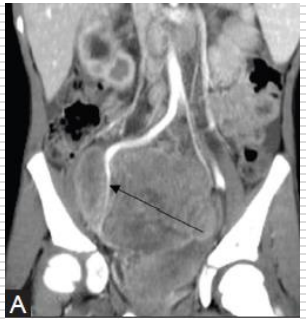
Metastatic dissemination, often fatal

mediate Risk (15%)

y invasive, most

roblastoma is responsible for 15% of childhood cancer mort

Surgery: Imaging Defined Risk Factors



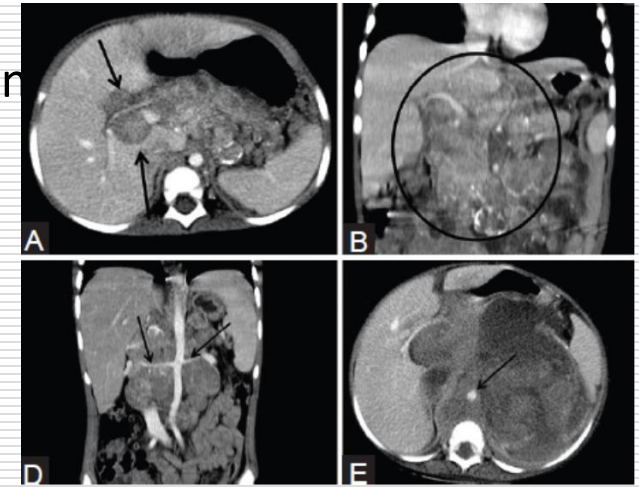
- Tumor encasing aorta and/or vena cava

pelvis

- Tumor infiltrating porta hepatis and/or

hepatoduodenal ligament

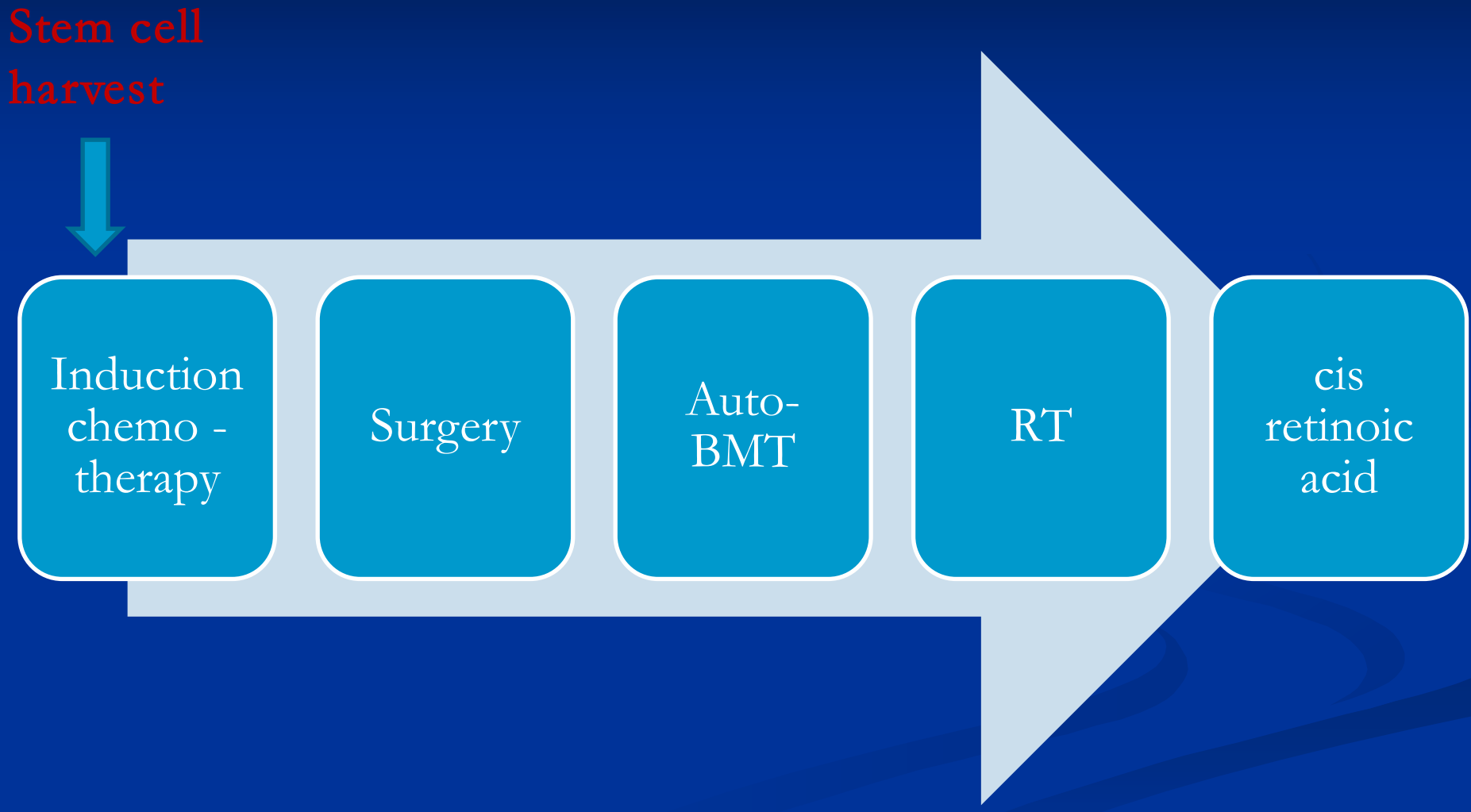
- Tumor encasing branches of superior mesenteric artery at mesenteric root
- Tumor encasing origin of celiac axis and/or origin
- superior mesenteric artery
- Tumor invading one or both renal pedicles
- Tumor encasing aorta and/or vena cava
- Tumor encasing iliac vessels
- Pelvic tumor crossing sciatic notch



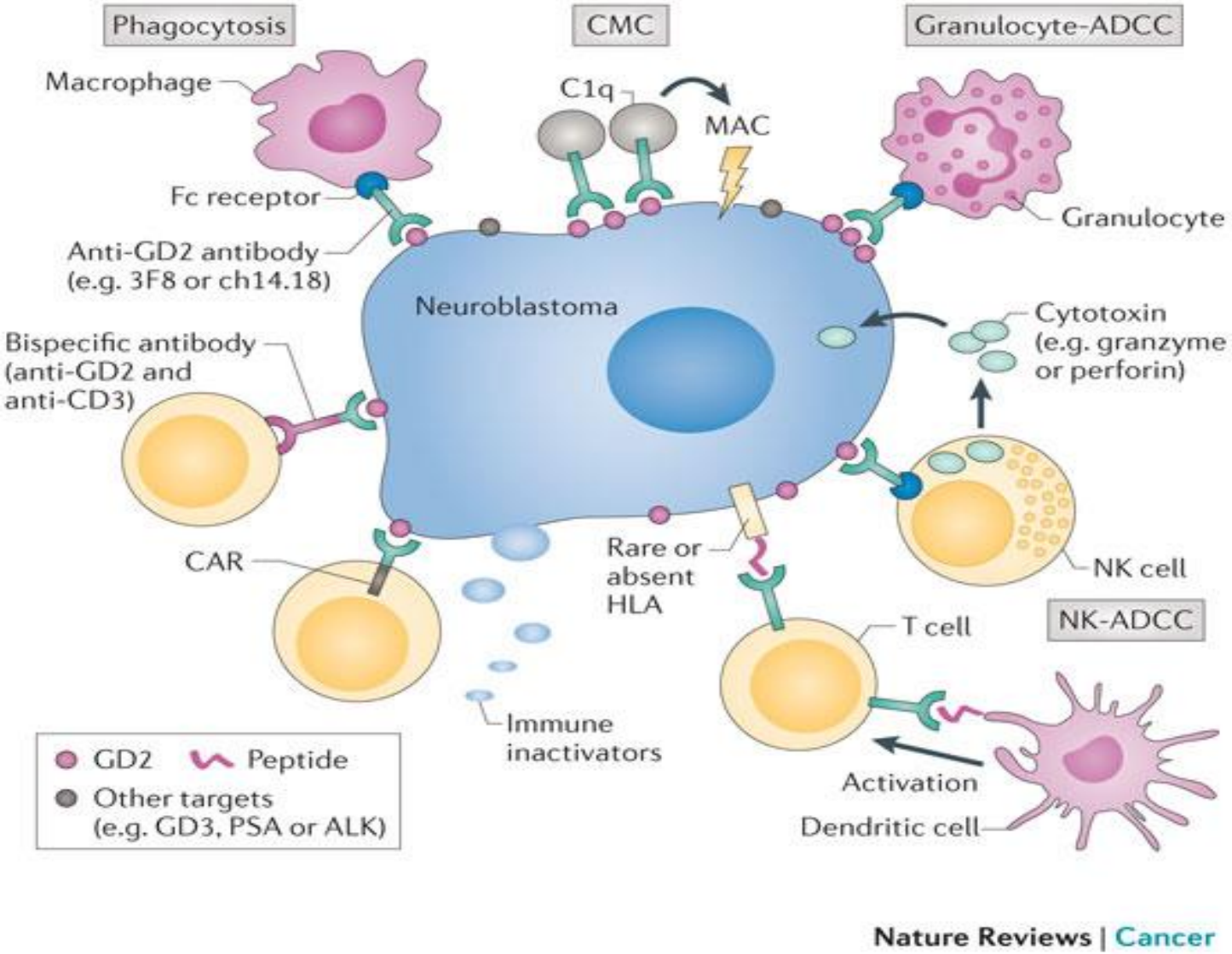
Neuroblastoma Treatment

Risk Group	Prognosis	Treatment
Low-Risk	> 90% survival	Surgery alone
Intermediate-Risk	80-90% survival	Surgery Chemotherapy
High-Risk	< 30% survival	Surgery Chemotherapy Autologous BMT Experimental therapies

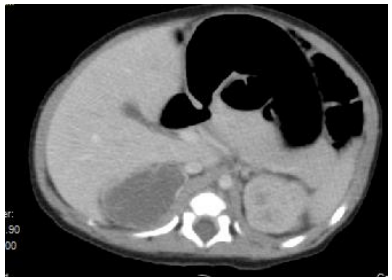
Treatment Plan:HR NBS



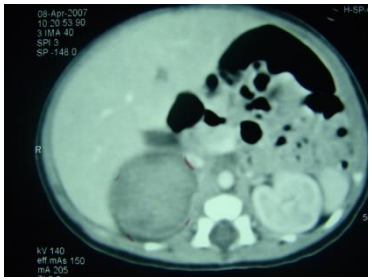
Immunotherapy in NBS



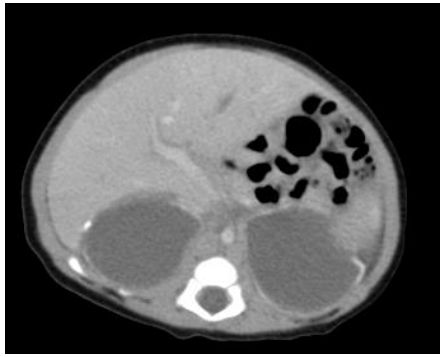
Adrenal HG

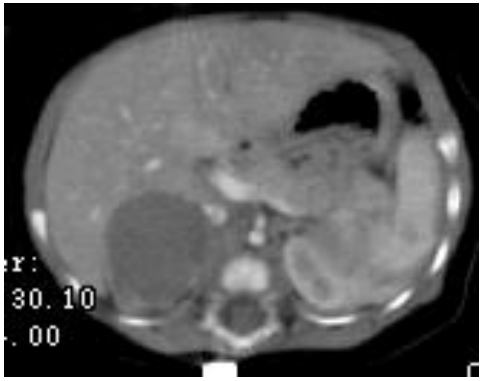


Irian
Hemihypertrophy
Beckwith

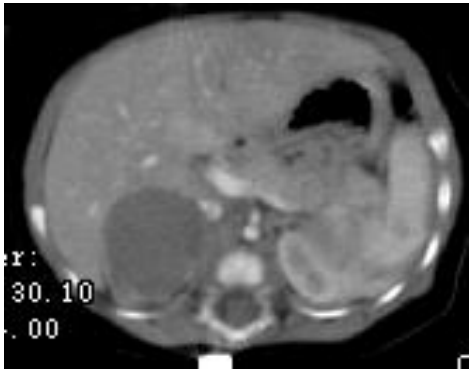


Zaid



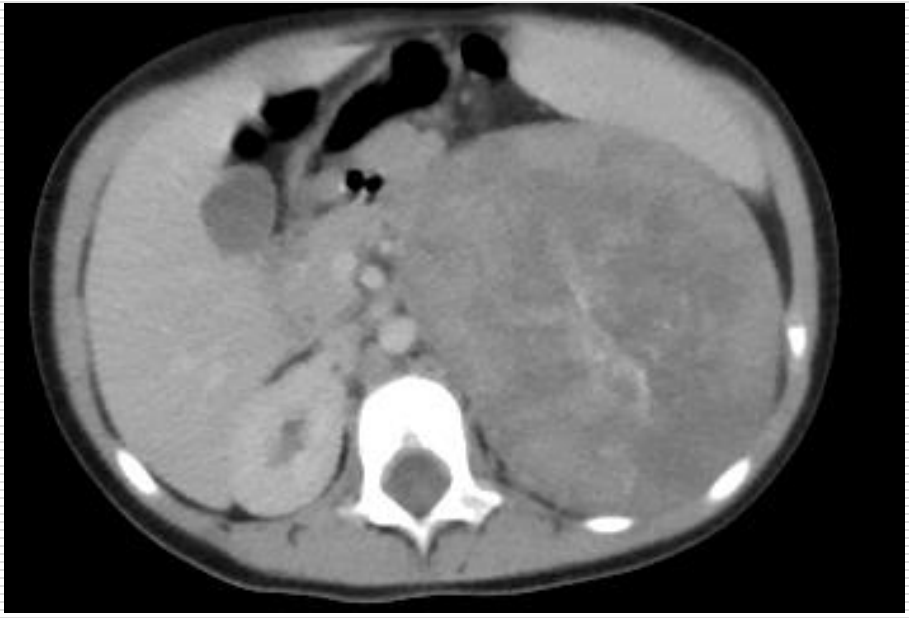


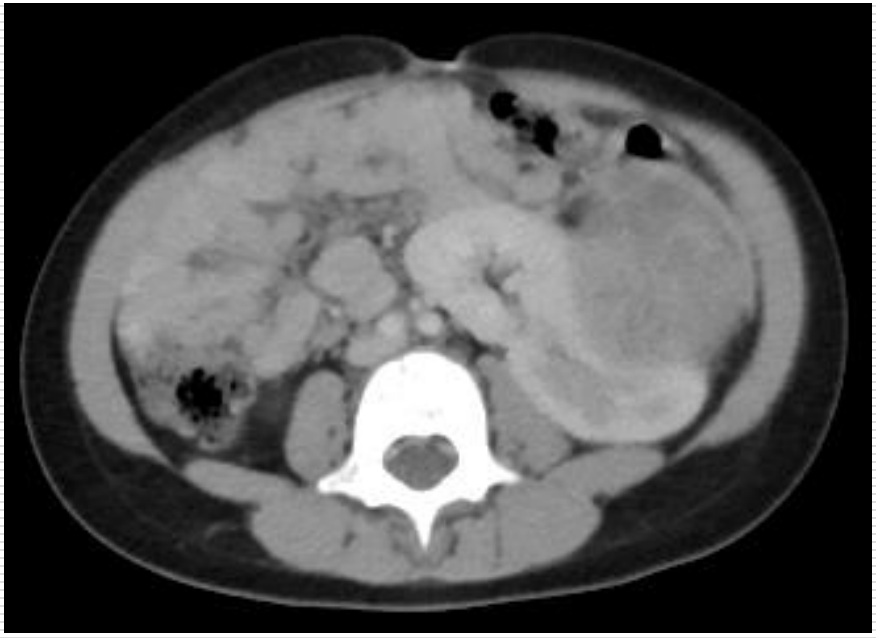
Rita NBS



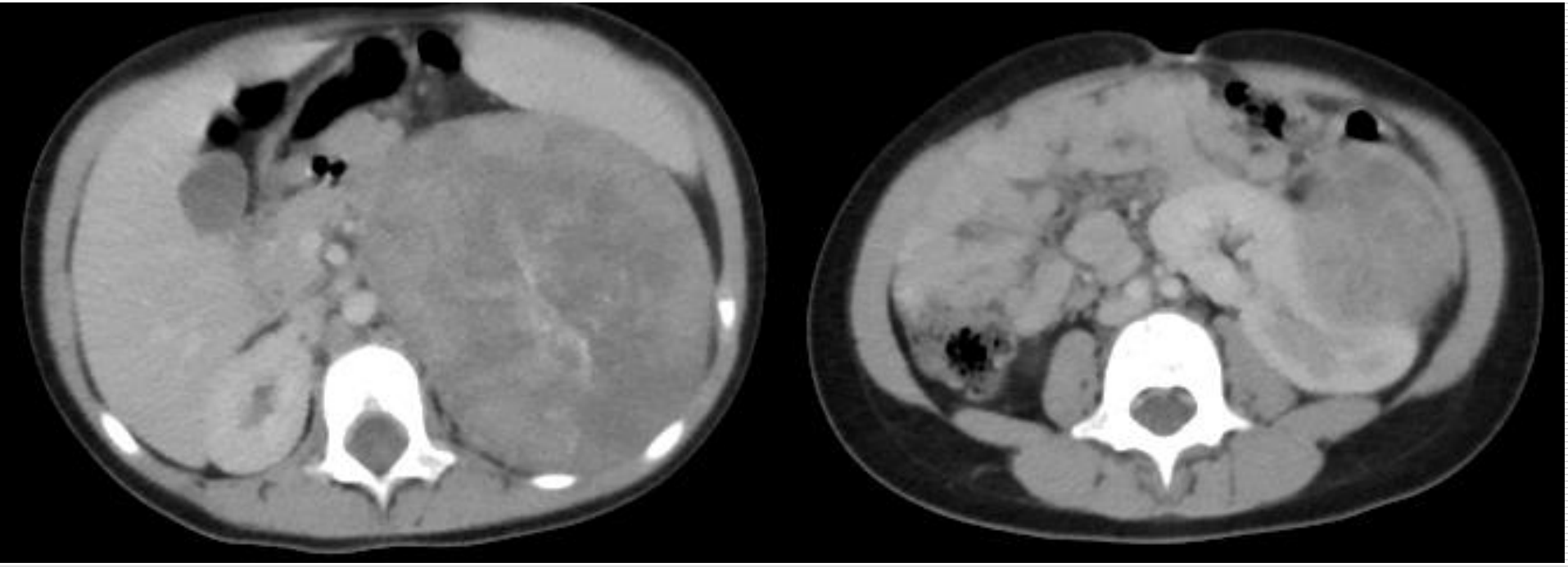
Abdominal Doppler ultrasound:There is about 3 x 3 x 3.3 cm soft tissue lesion containing a few blood vessels seen throughout the lesion and located in the right suprarenal area.

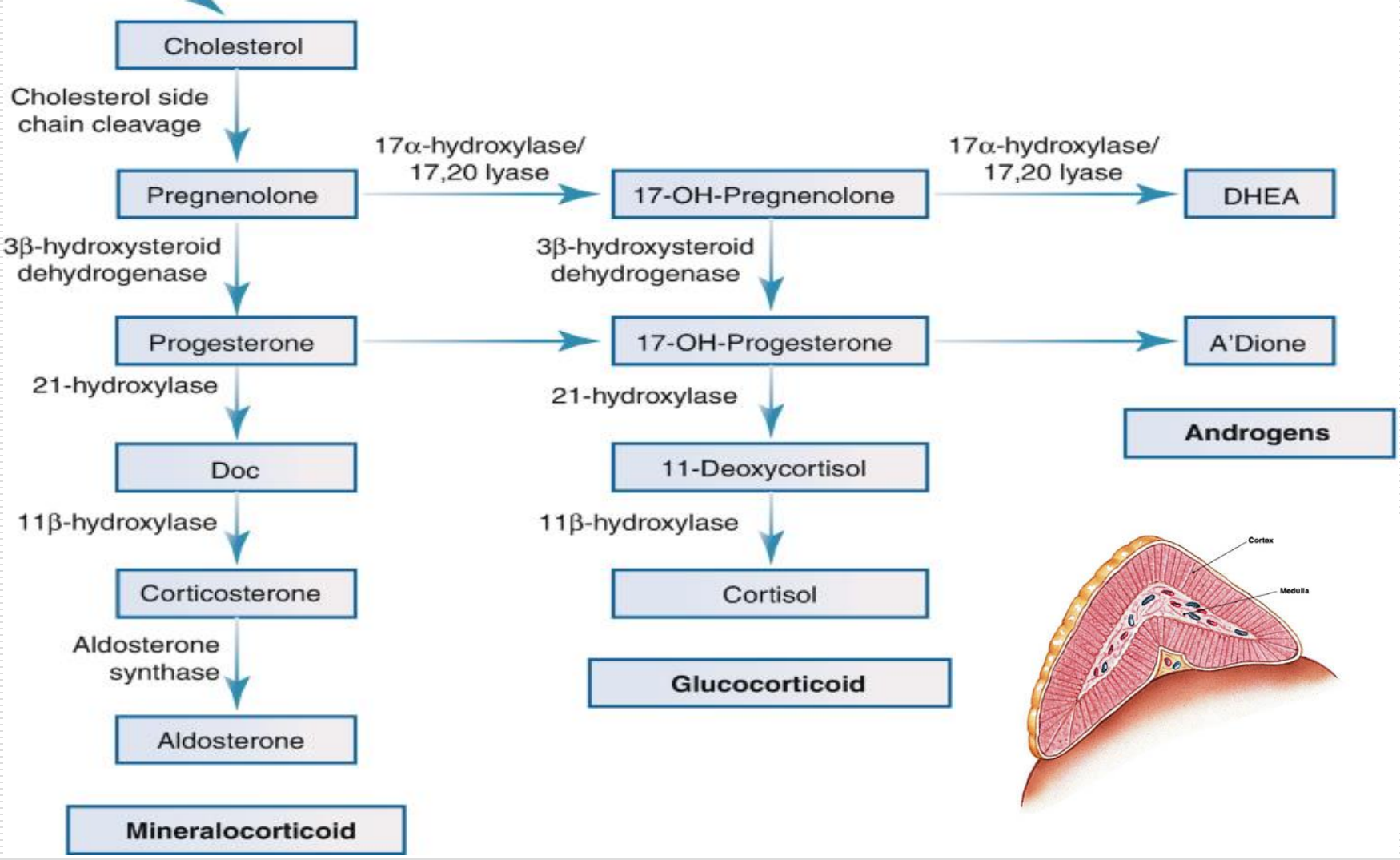
2,5 years female : Kidney vs Adrenal mass.





Precousios puperty: pubic hair
Adrenal mass : Medulla vs cortex



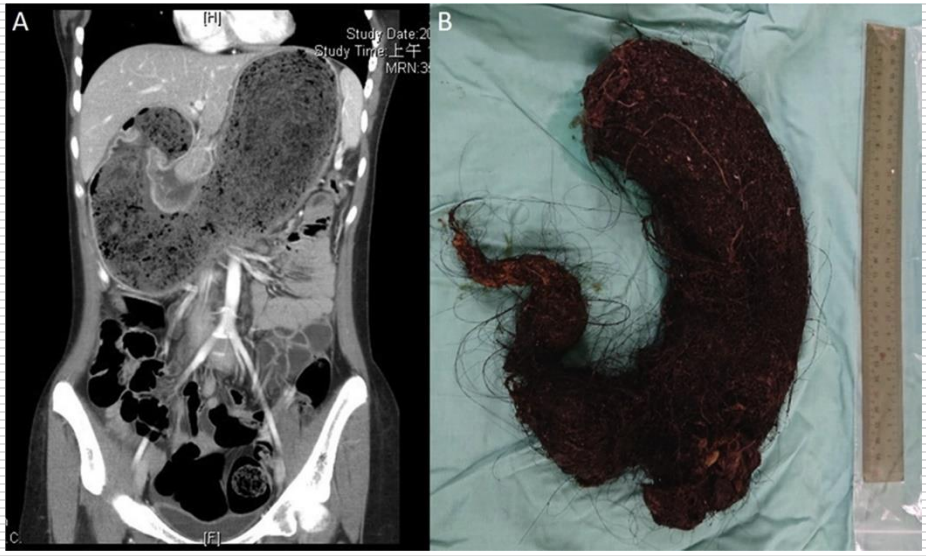


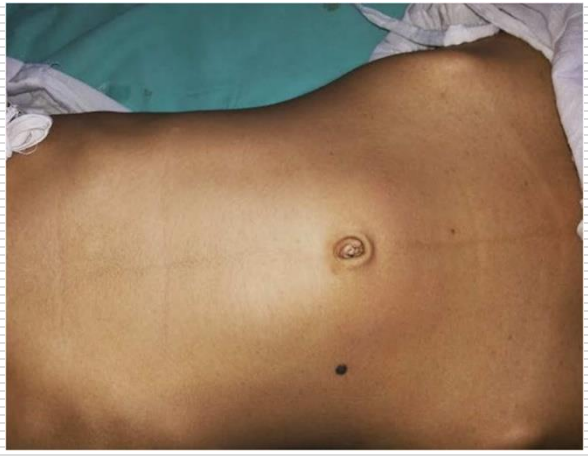
Zone glomerulosa middle

Zona Fasciculata

Zona Reticularis (Outer)

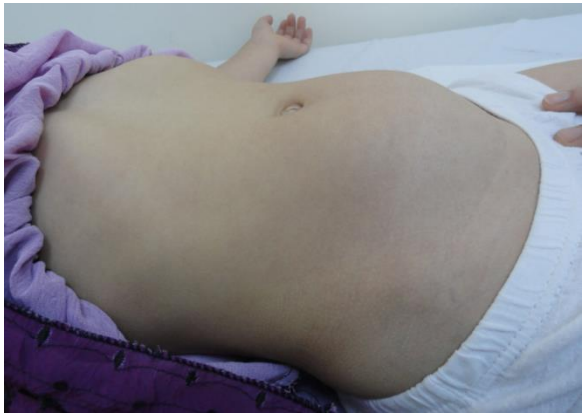
A 14 Y Female Having Pica, Dx? Trichobezoar

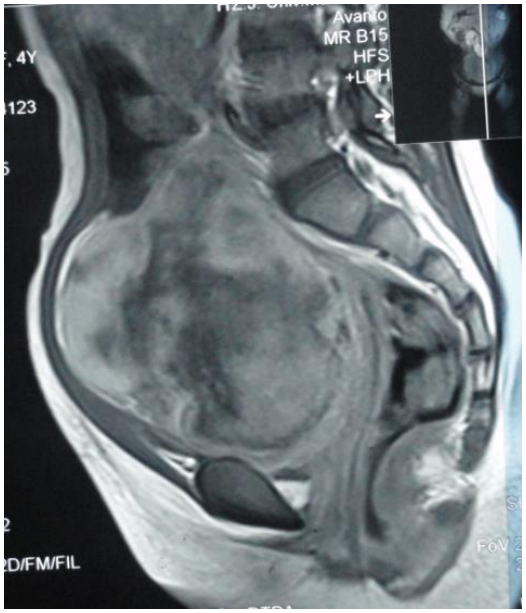


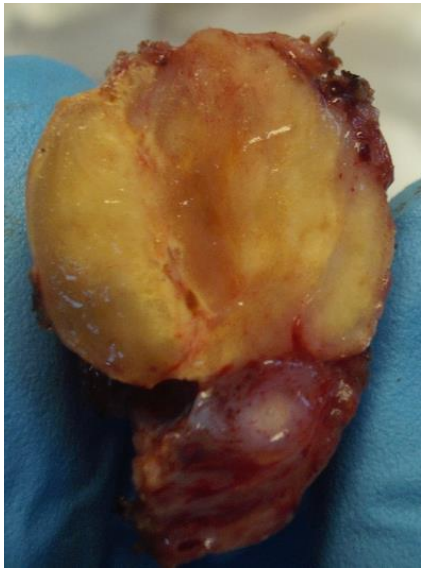


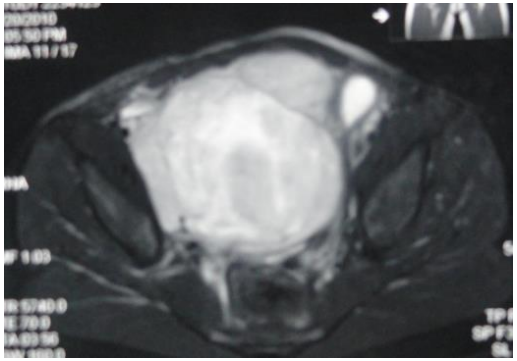
RMS

Naziha

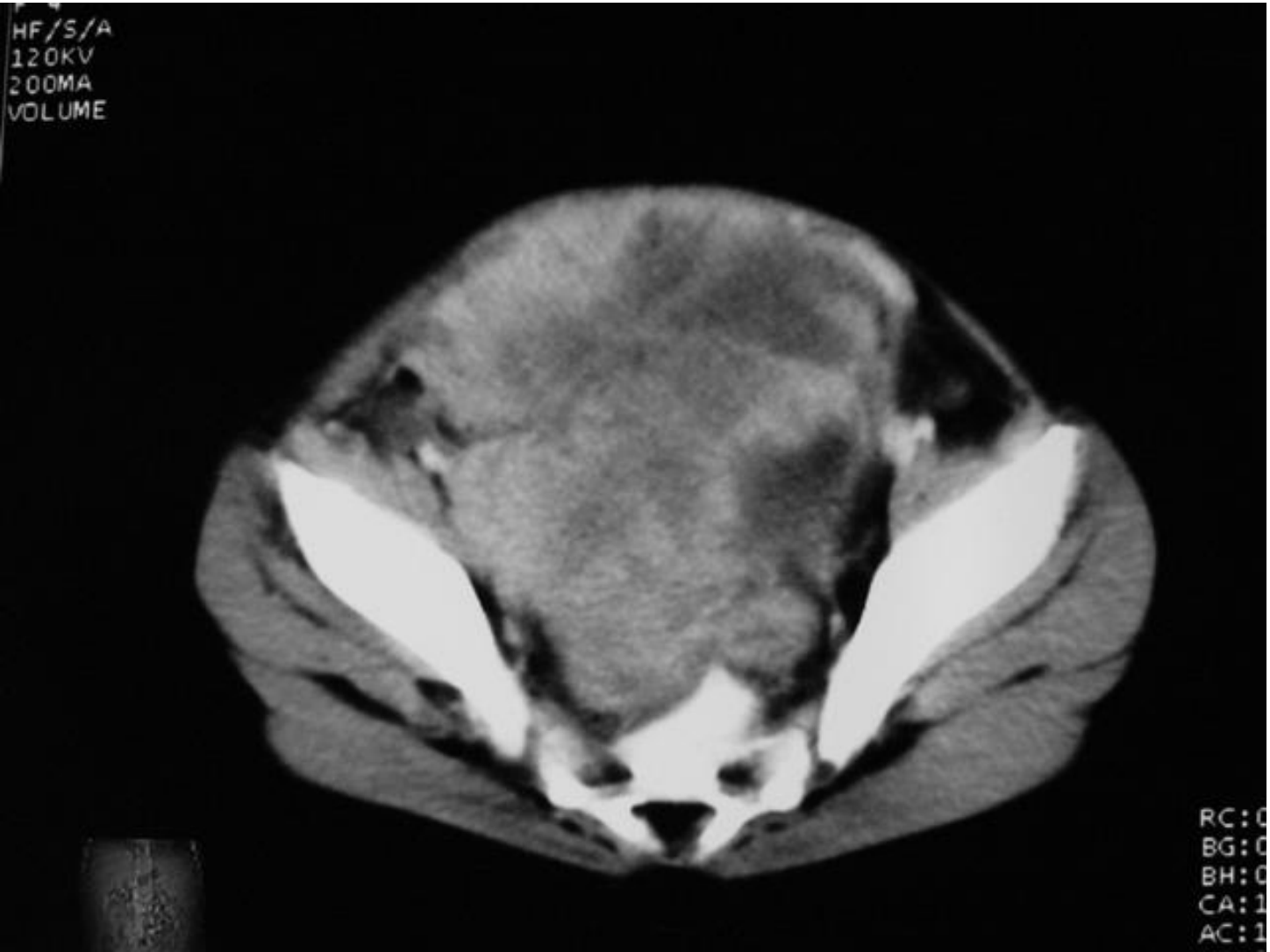




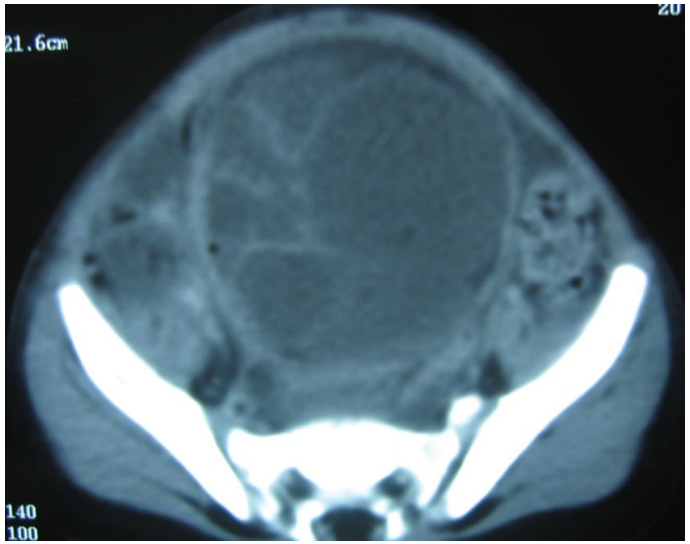


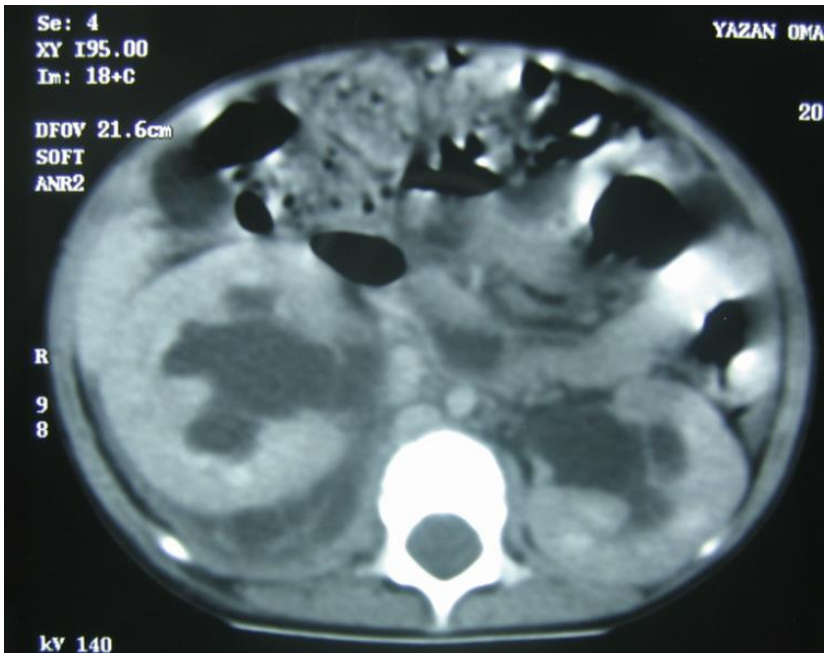


Sereen Kayali: Bladder RMS

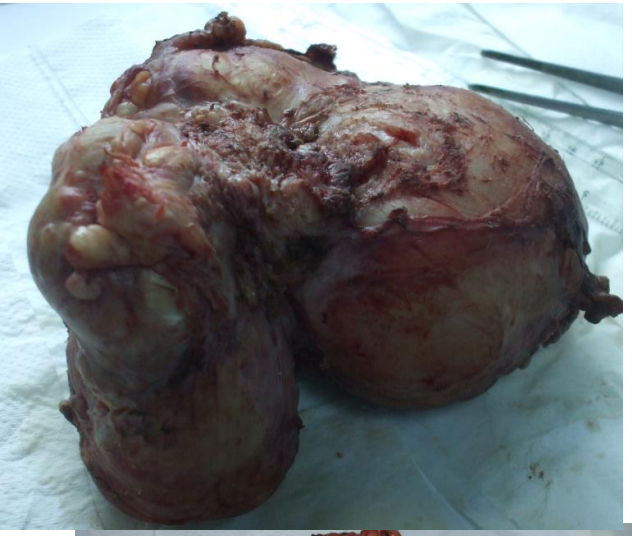


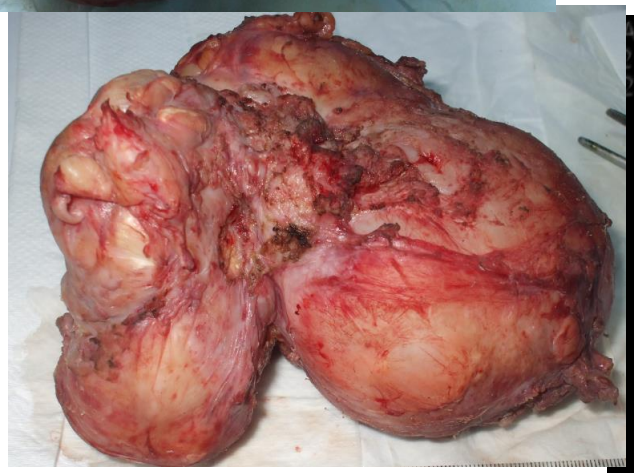
Yazan:Bladder

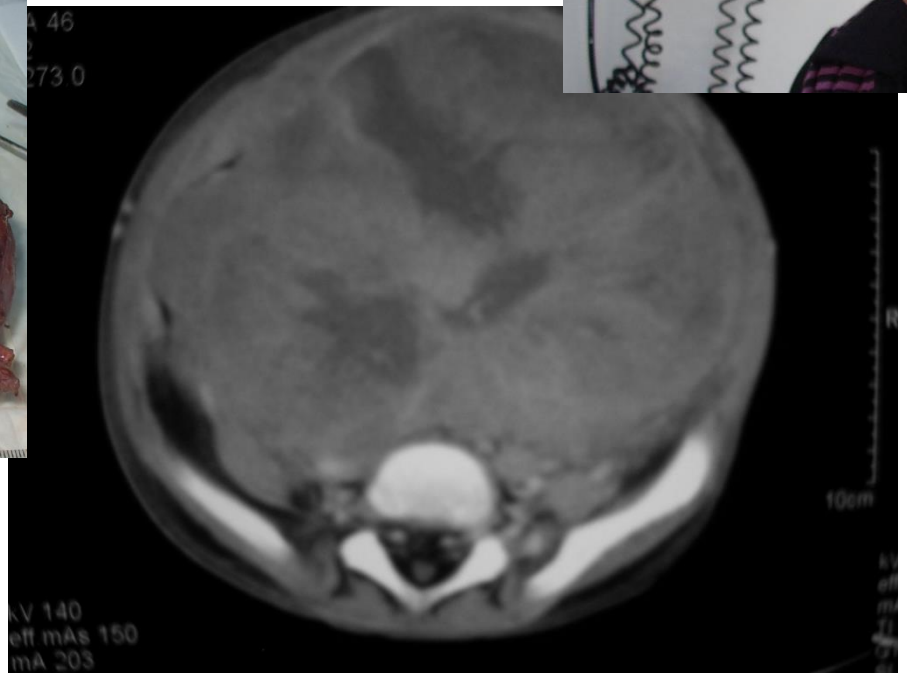


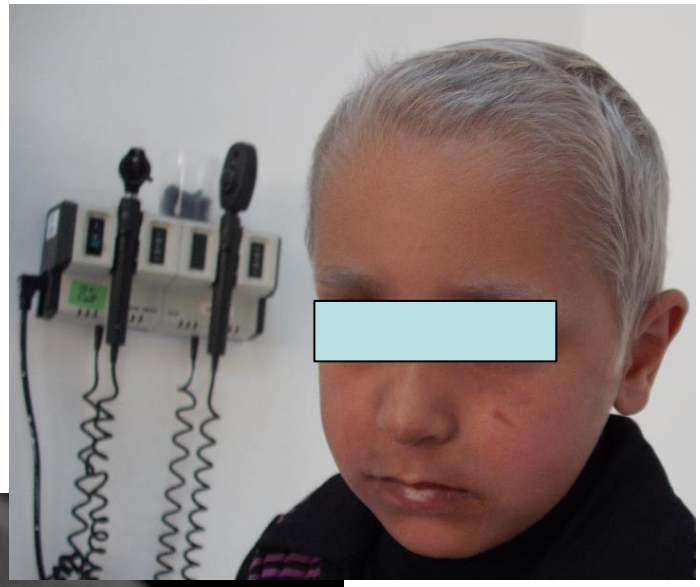


Obada



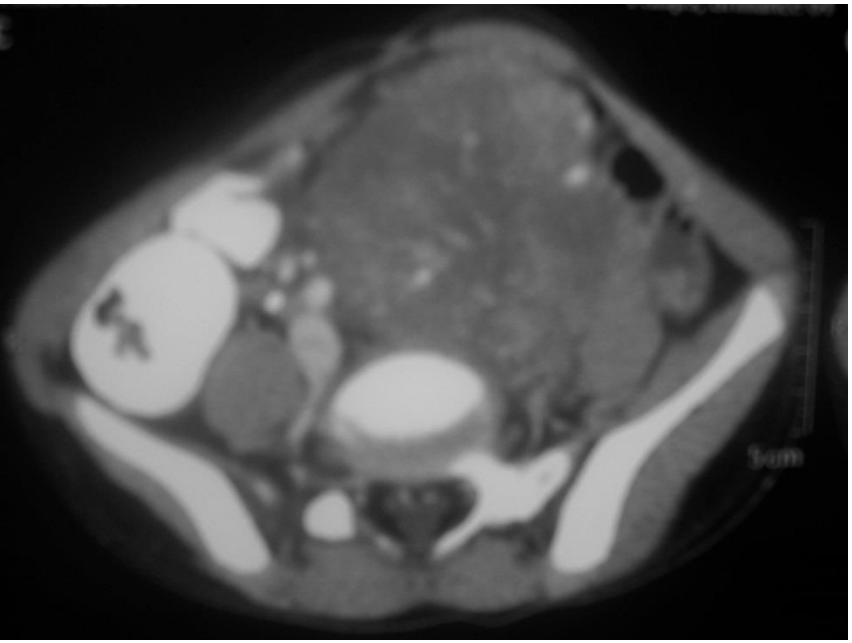




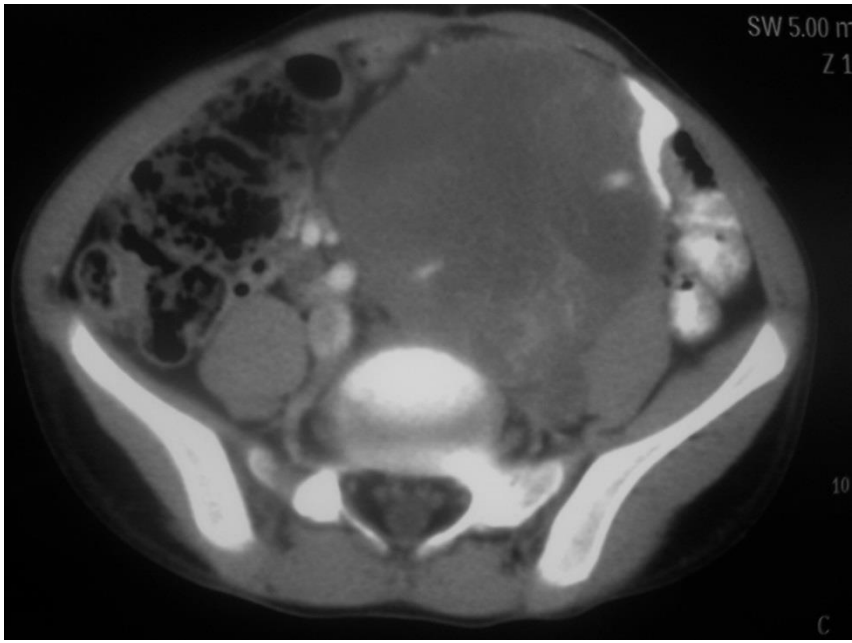


Mohd Asafra: Bladder

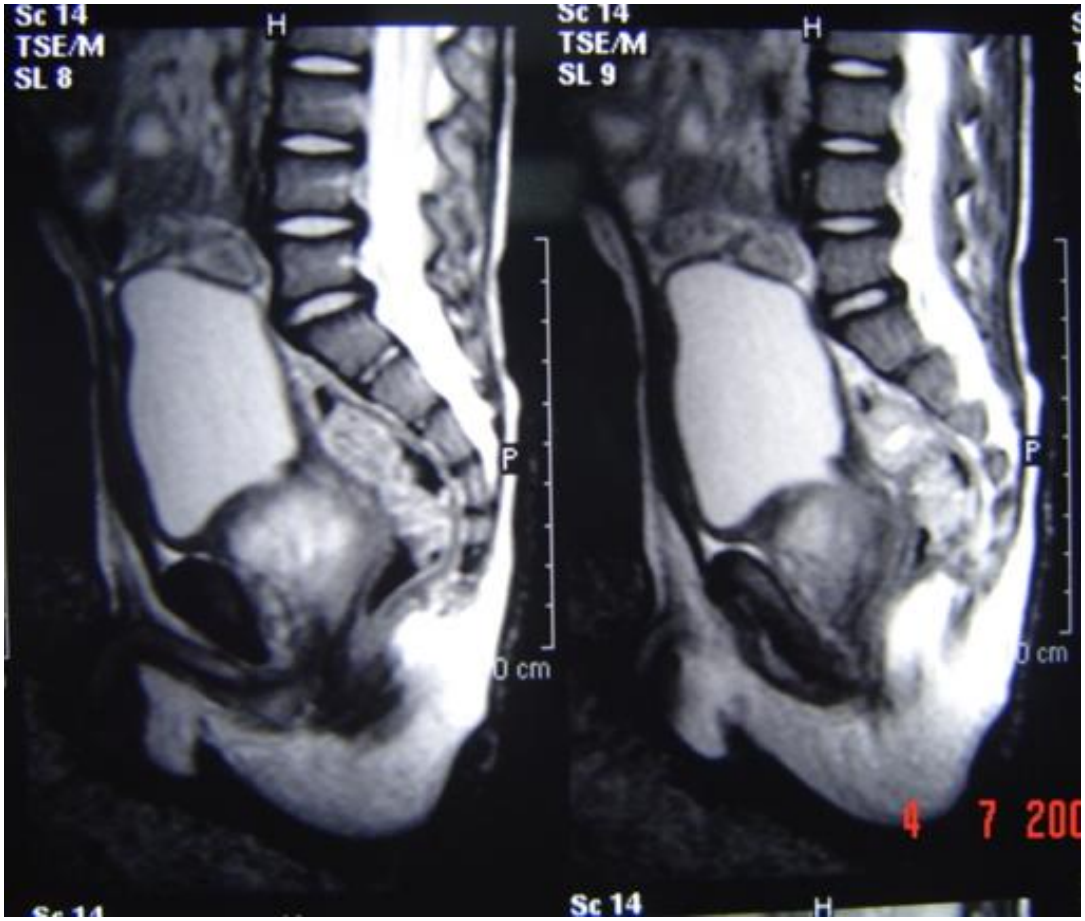
Pre



Post

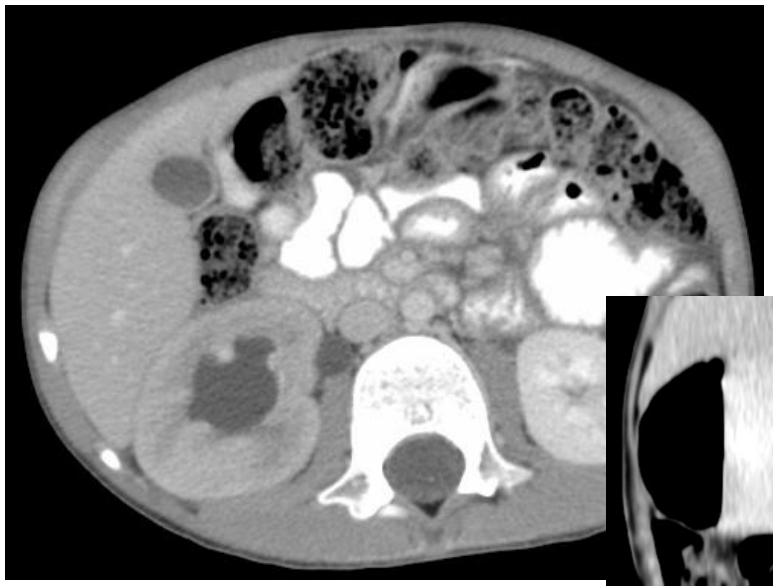


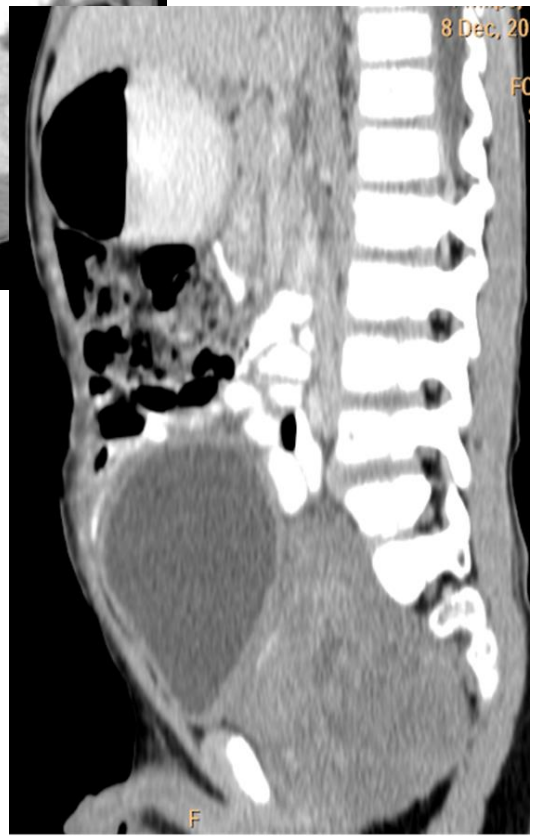
Mohamammad Tahseen Ibrahim-Prostate.

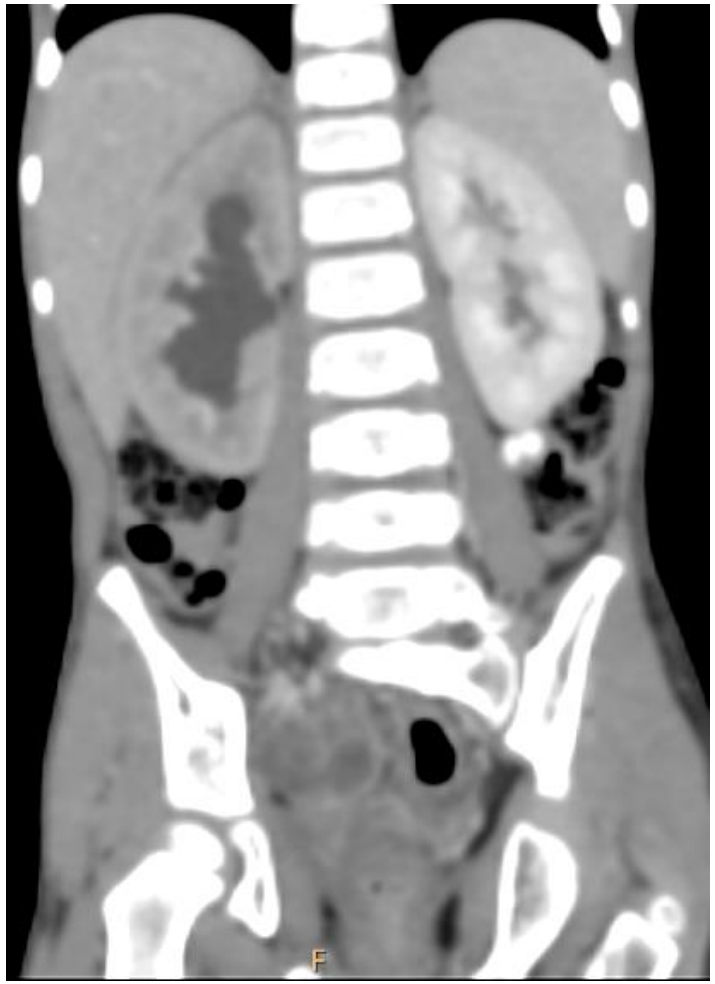


T2

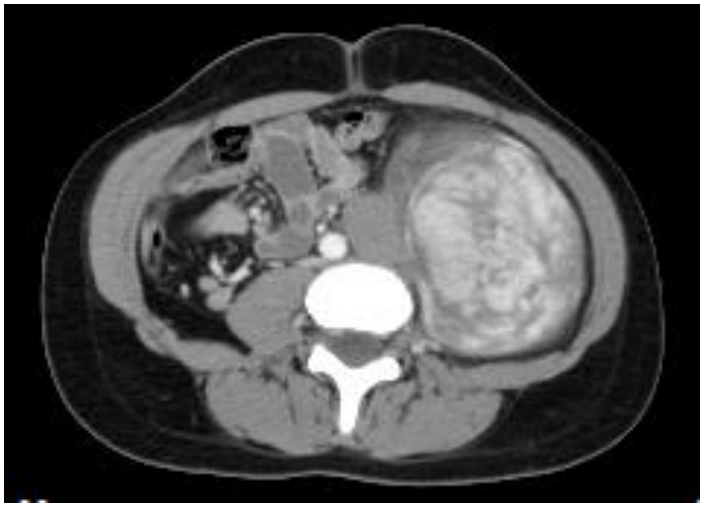
Ahmad Nada: Prostate

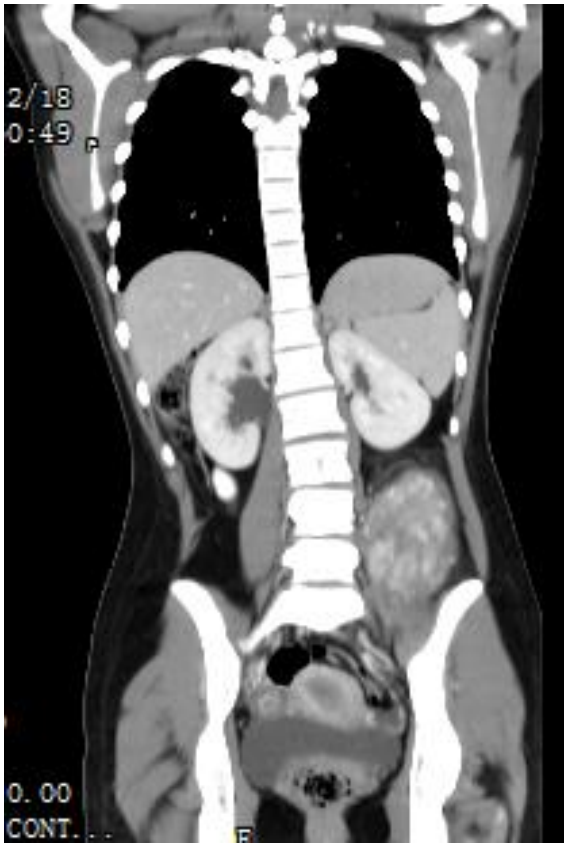




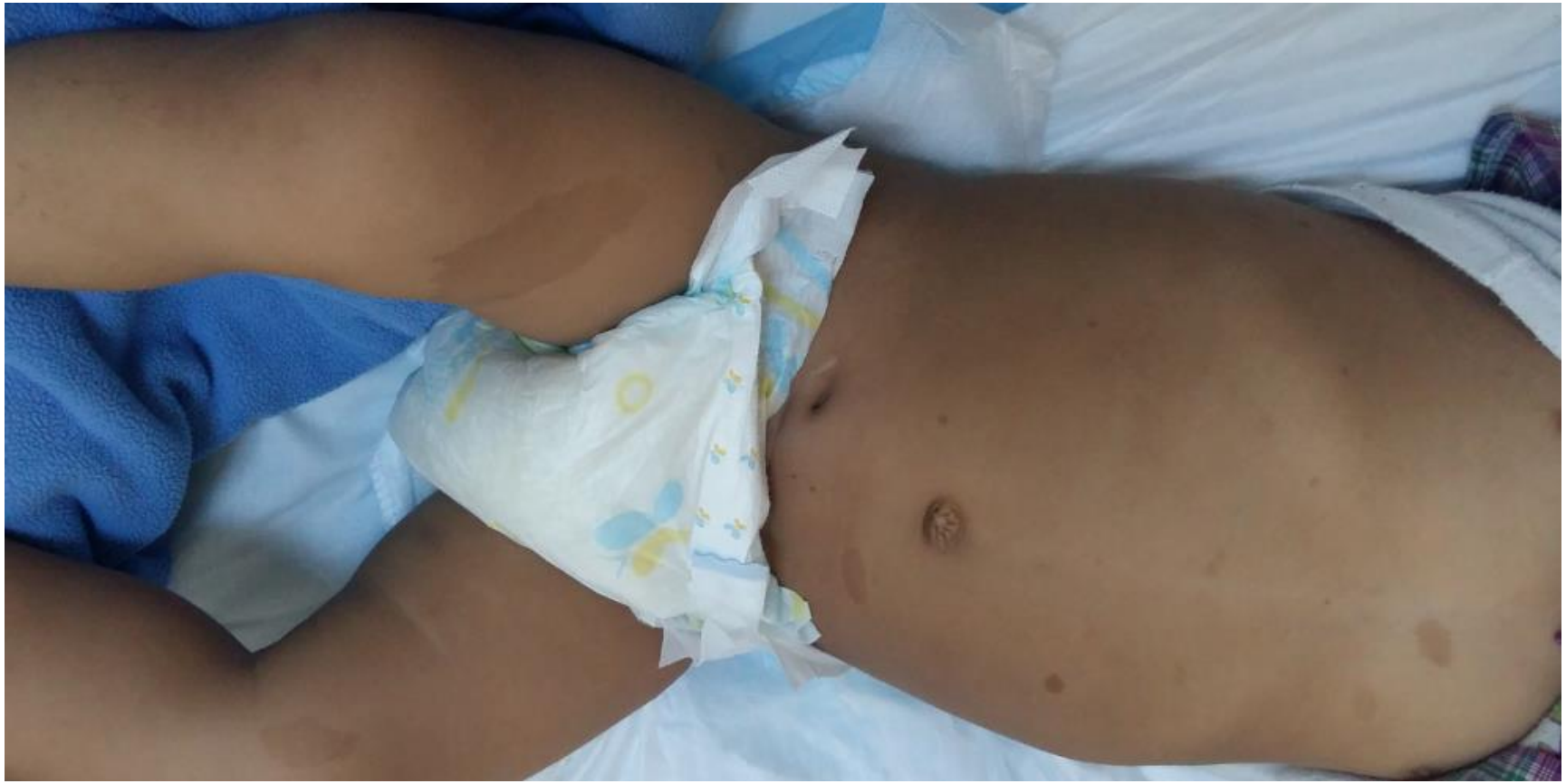


Retroperitoneal Synovial sarcoma

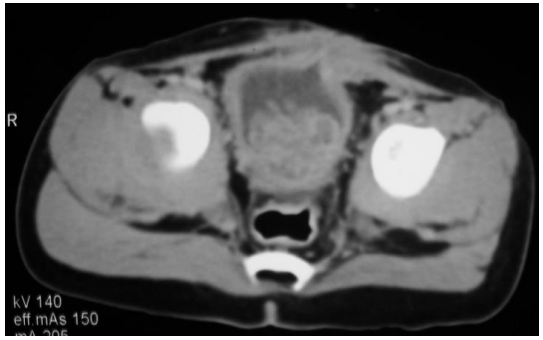


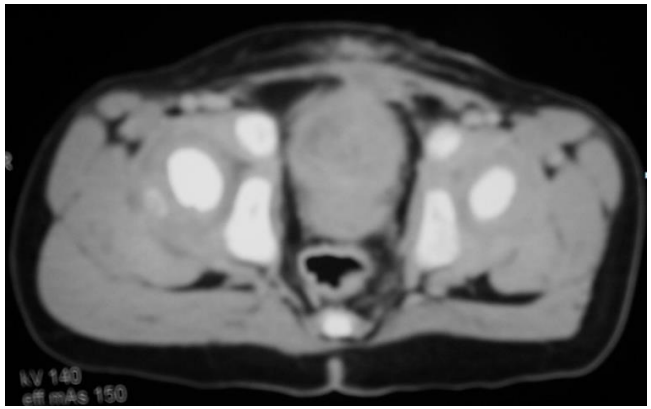


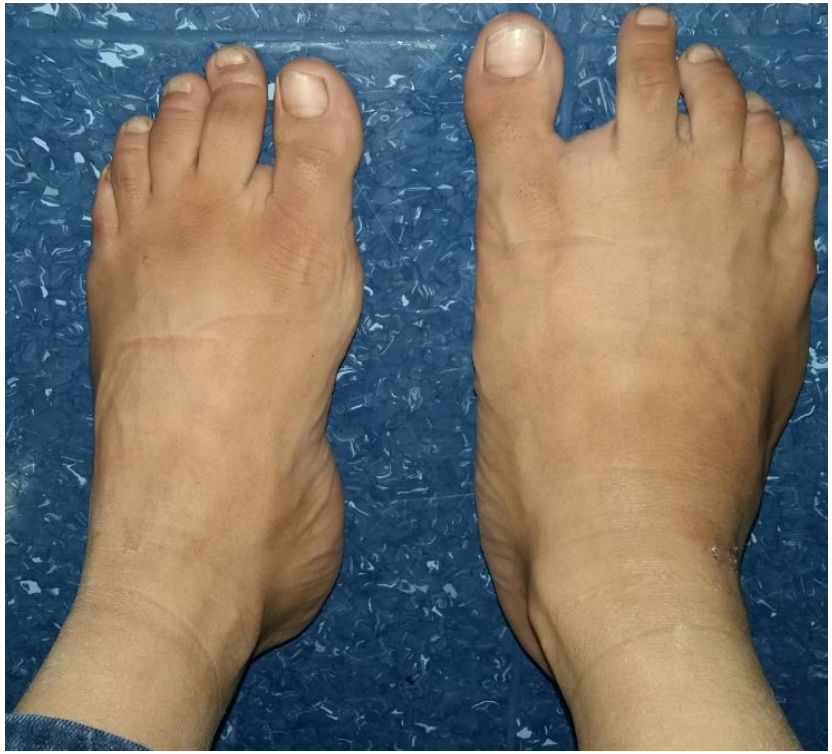
Khaled Nahas: prostate RMS
What else?

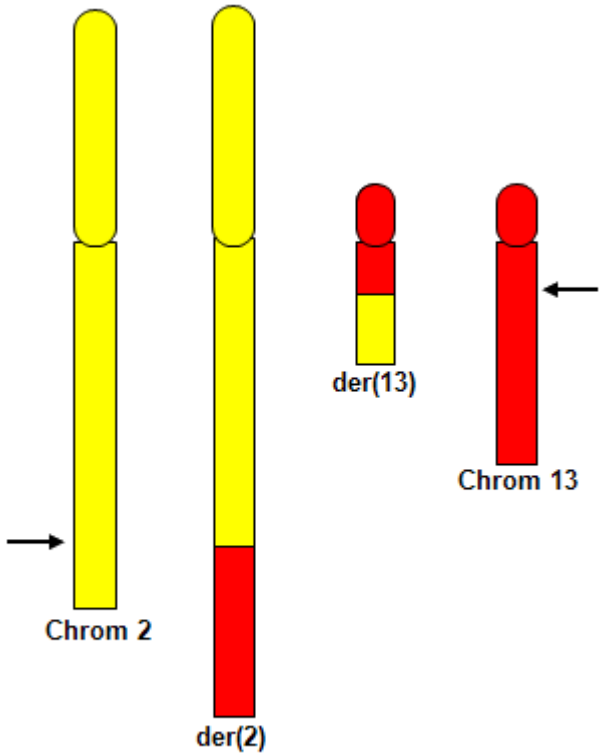


PROTEUS SYNDROM: OVERGROWTH



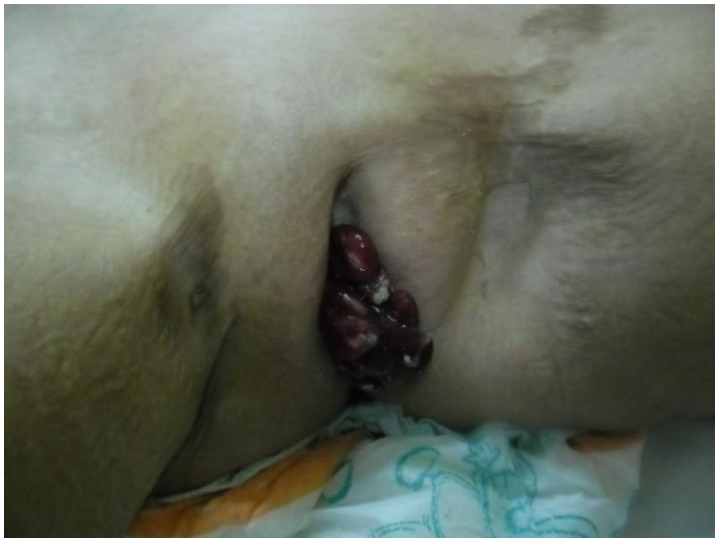






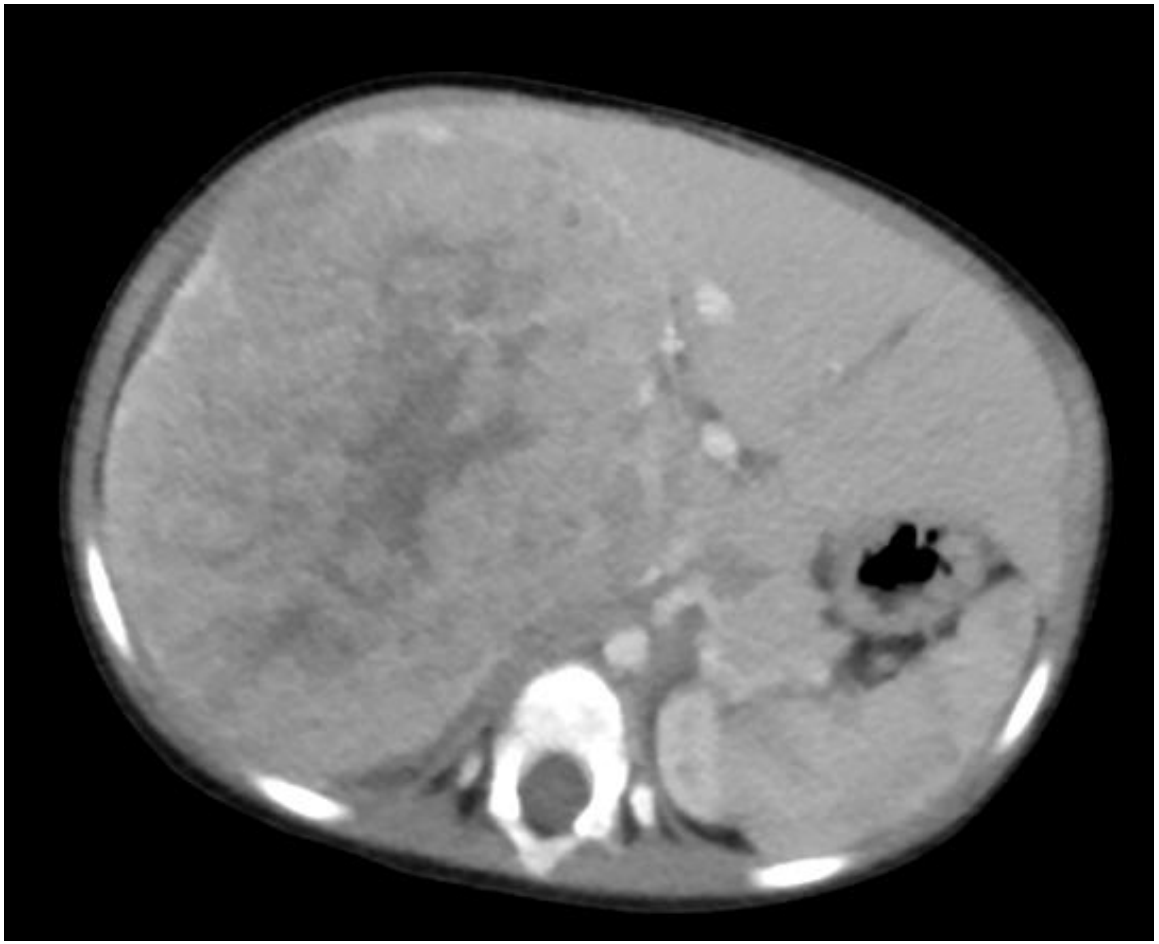
t(2;13)(q35;q14)

VAGINAL BOTROID RMS

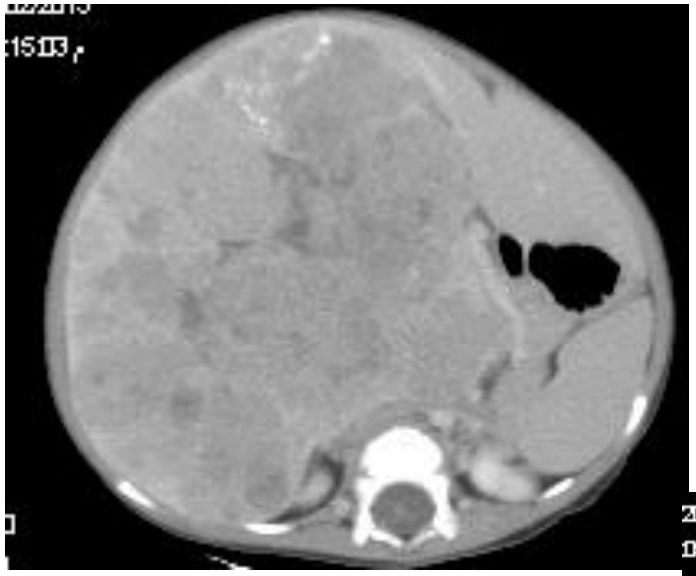


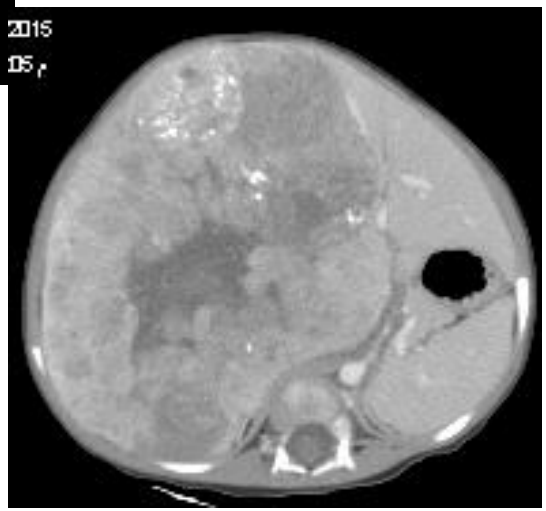
Liver masses

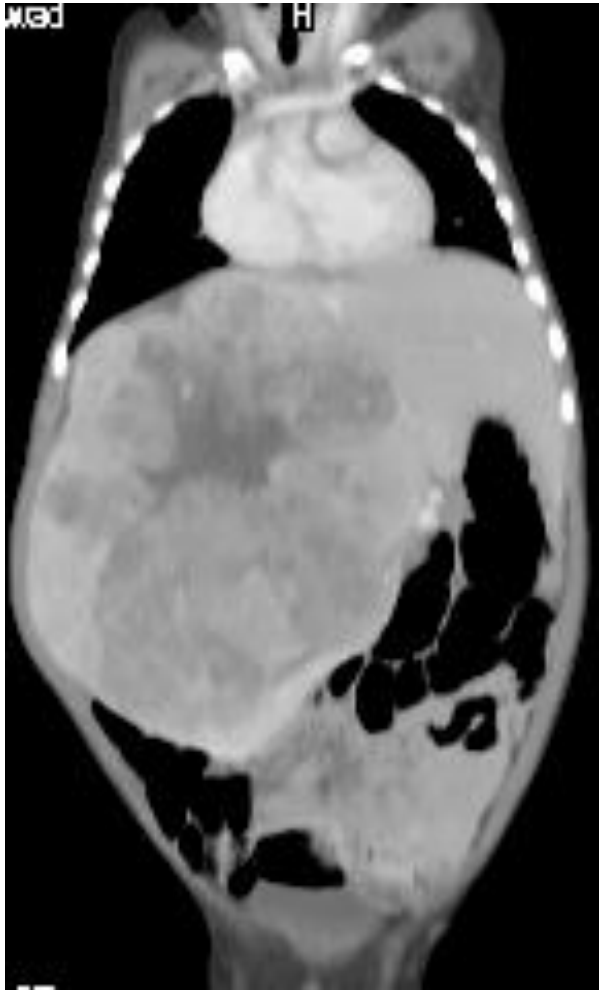
Masa: HB



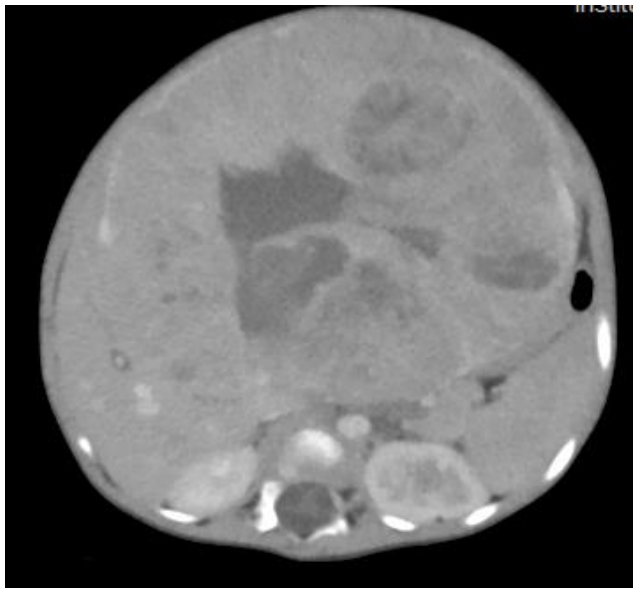
AFP 200,000

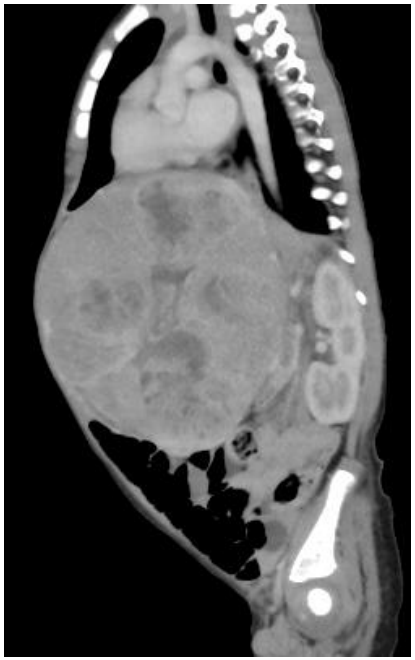


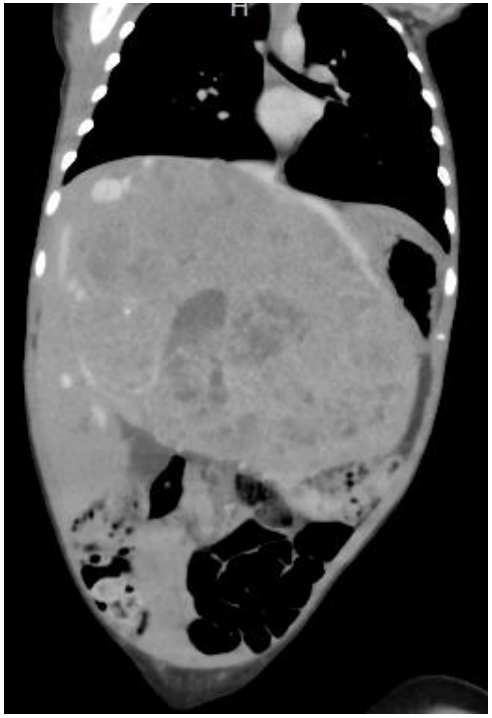




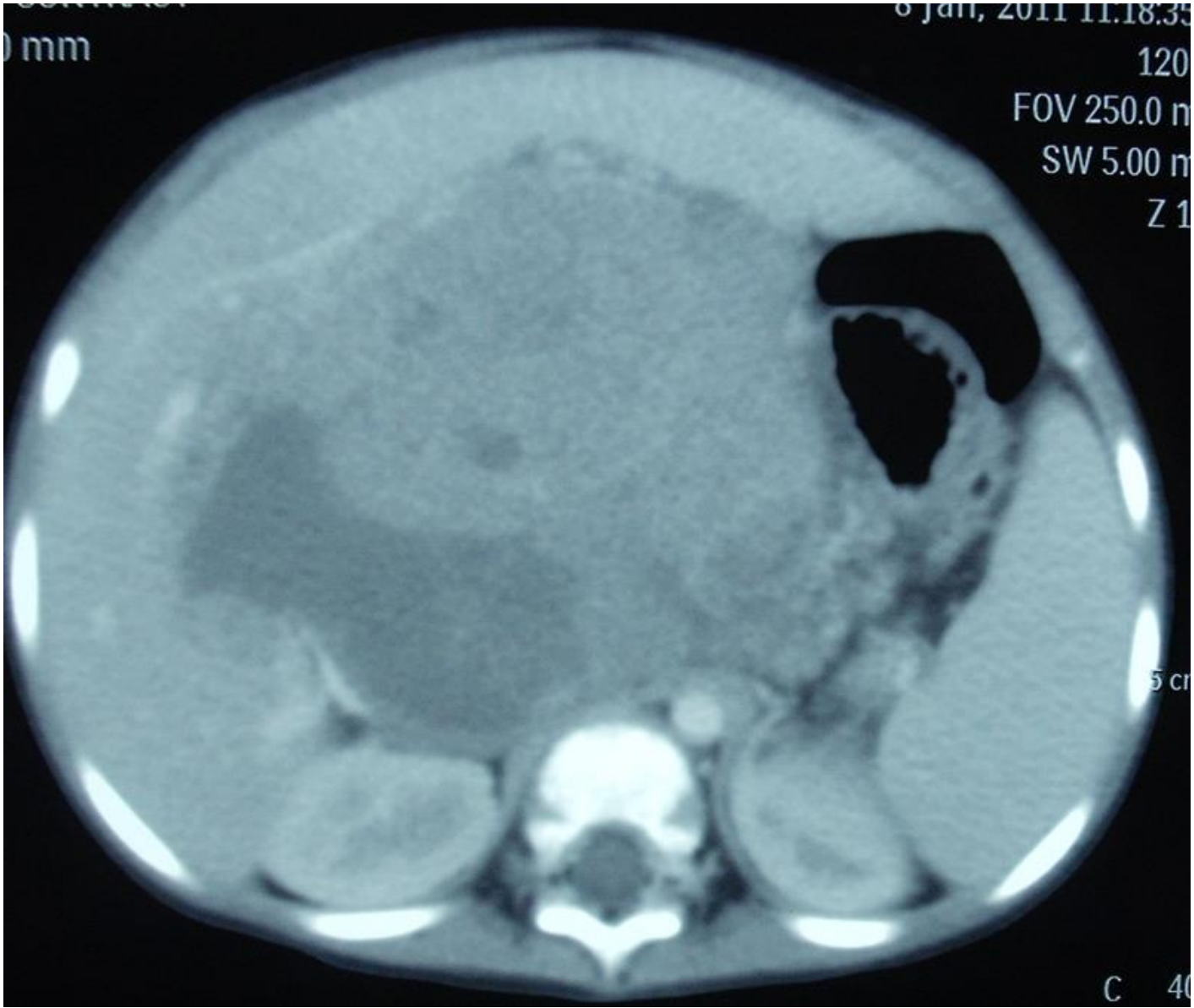
Tasneem: HB : AFP 1089000

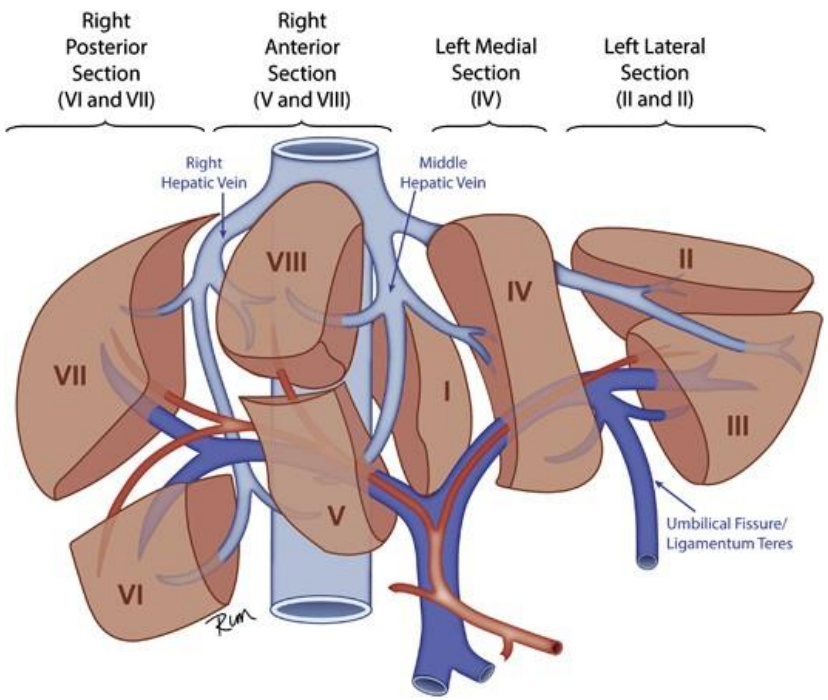


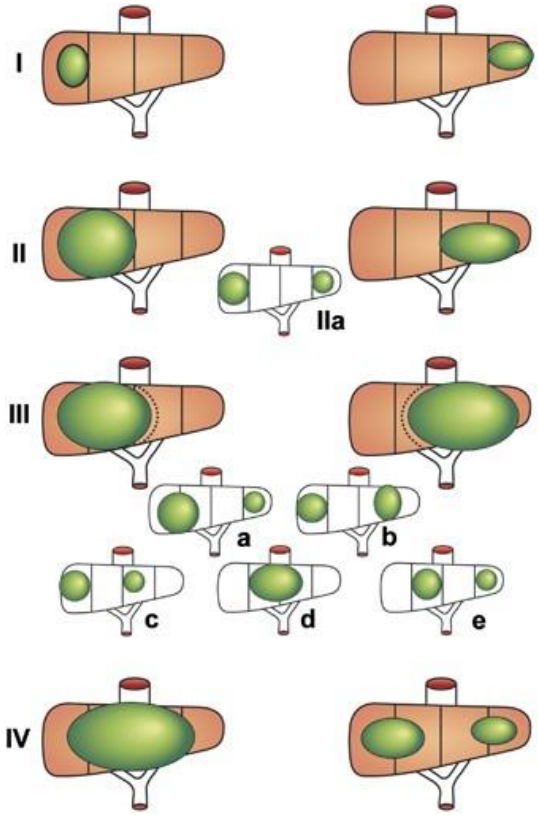




HB







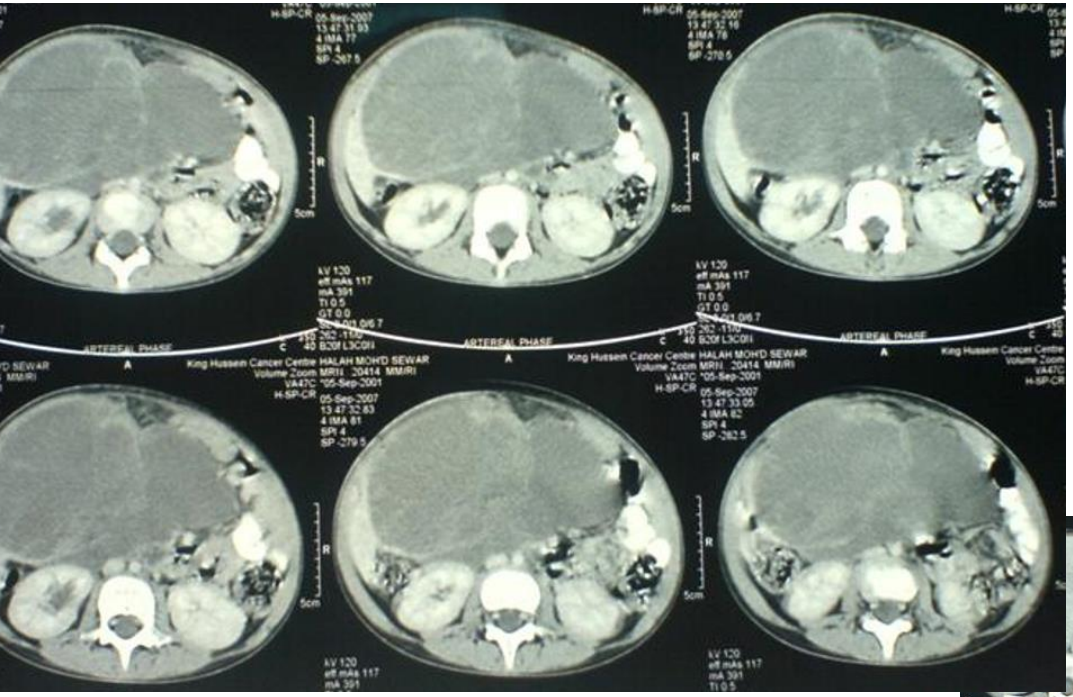
PRETEXT
Pretreatment ***Ext***ent of Disease

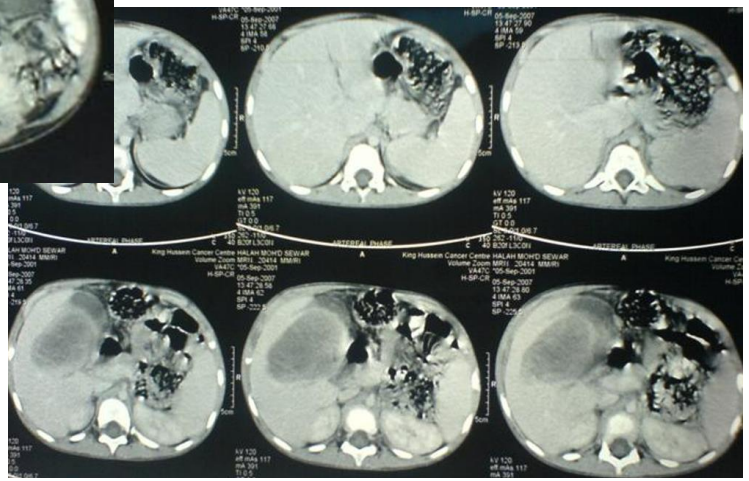
POSTTEXT
Postreatment ***Ext***ent of Disease, extent of liver involvement after pre-operative chemotherapy

I … 3 contiguous sections tumor free
II … 2 contiguous sections tumor free
III … 1 contiguous sections tumor free
IV … no contiguous sections tumor free

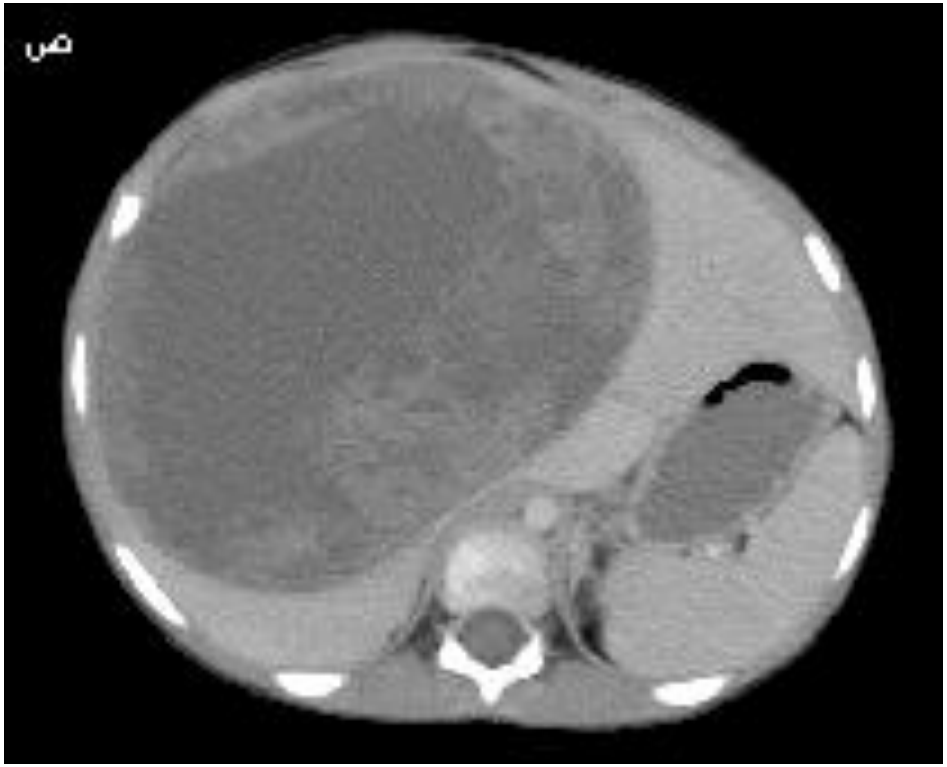
In addition, any group may have:
V …ingrowth vena cava, all 3 hepatic veins
P …ingrowth portal vein, portal bifurcation
E …extrahepatic
C …caudate
M…metastasis

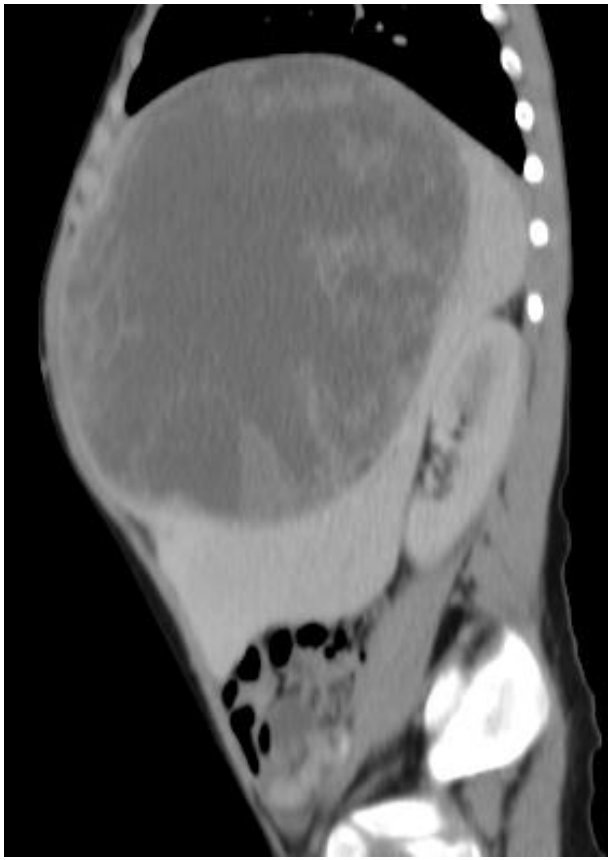
Embryonal liver sarcoma



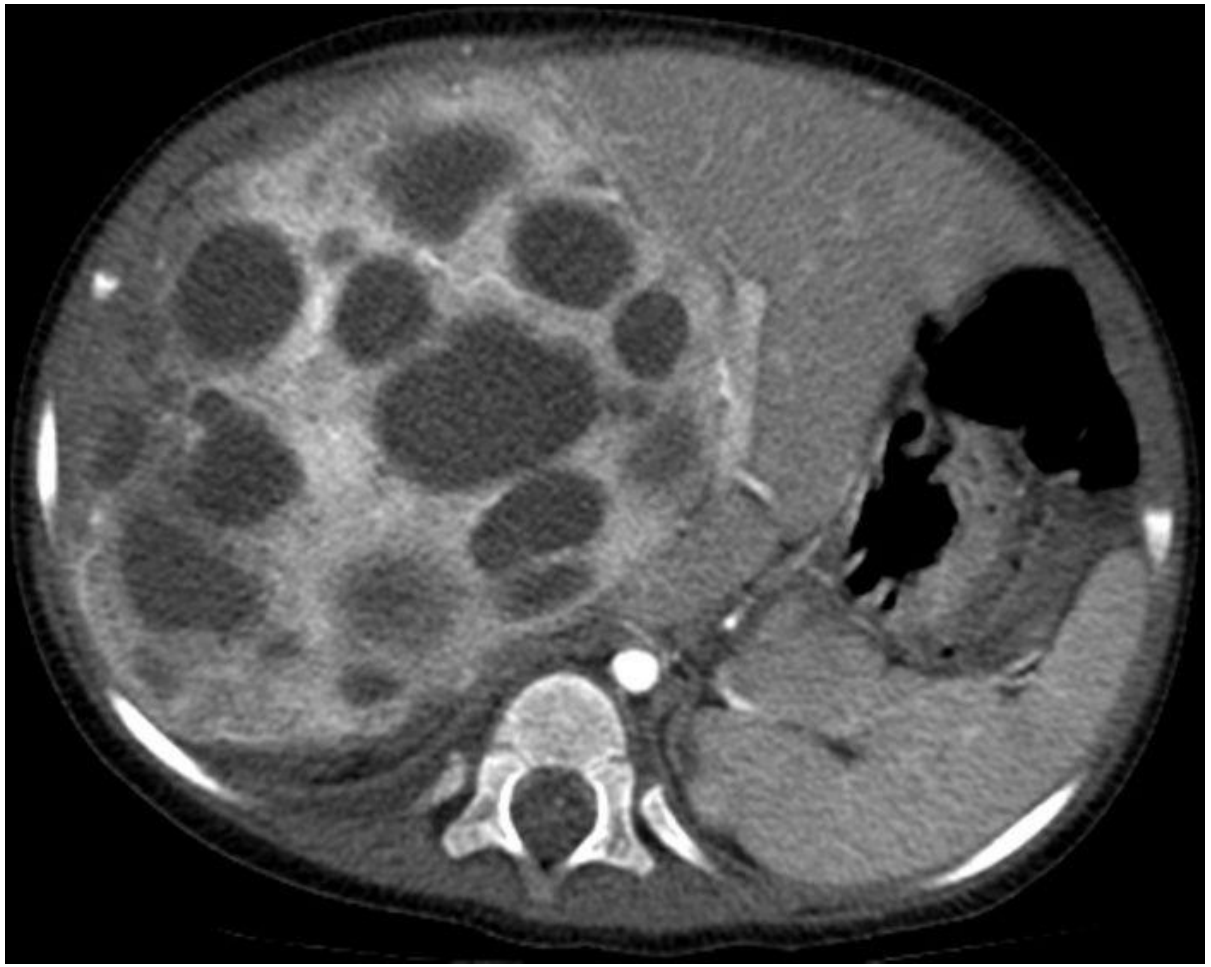


Farah
Liver Sarcoma: normal AFP

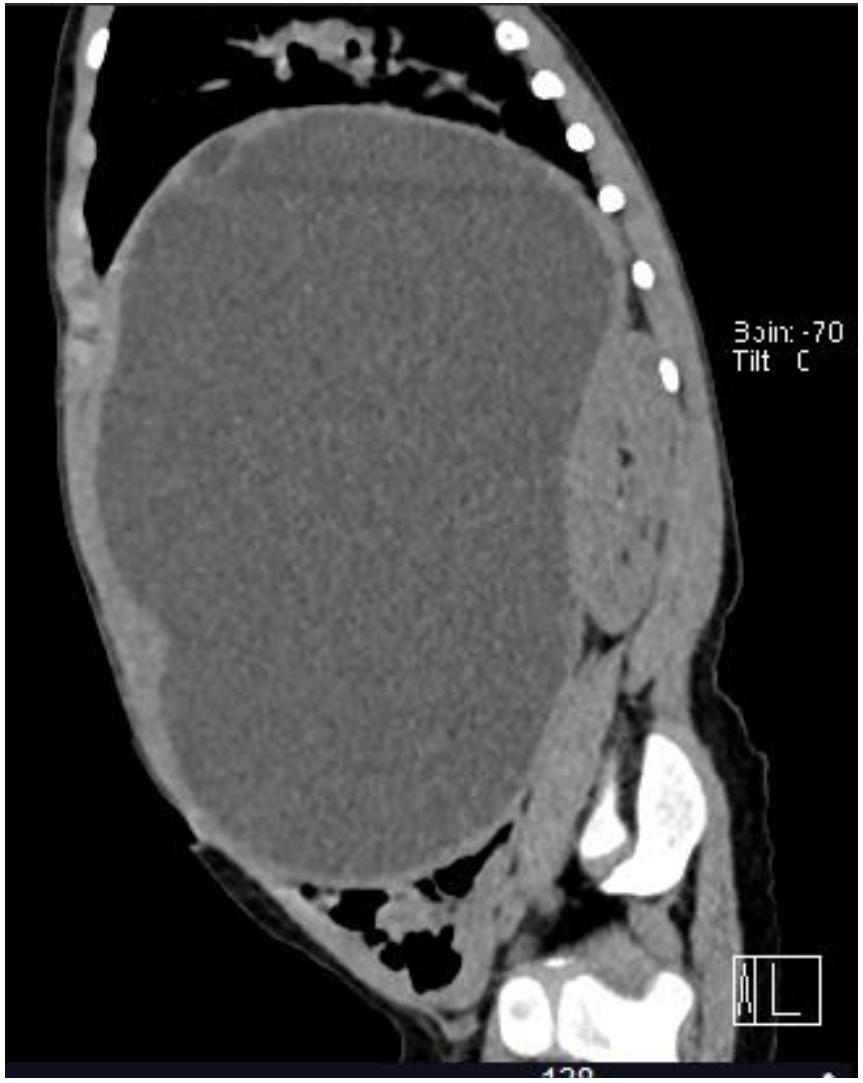


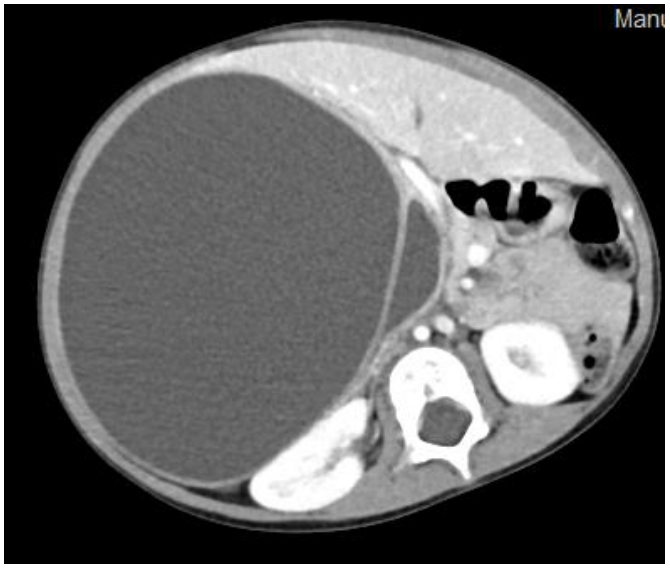


Mesenchymal hamartoma of liver



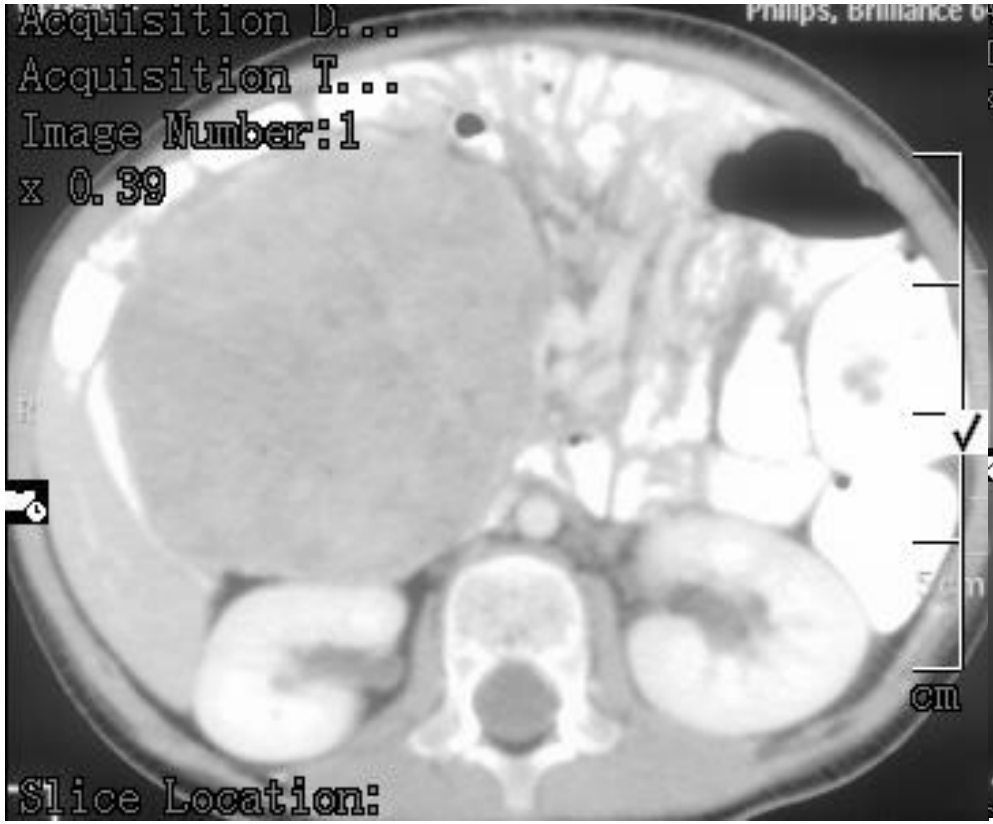
Mesenchymal hamartoma of liver

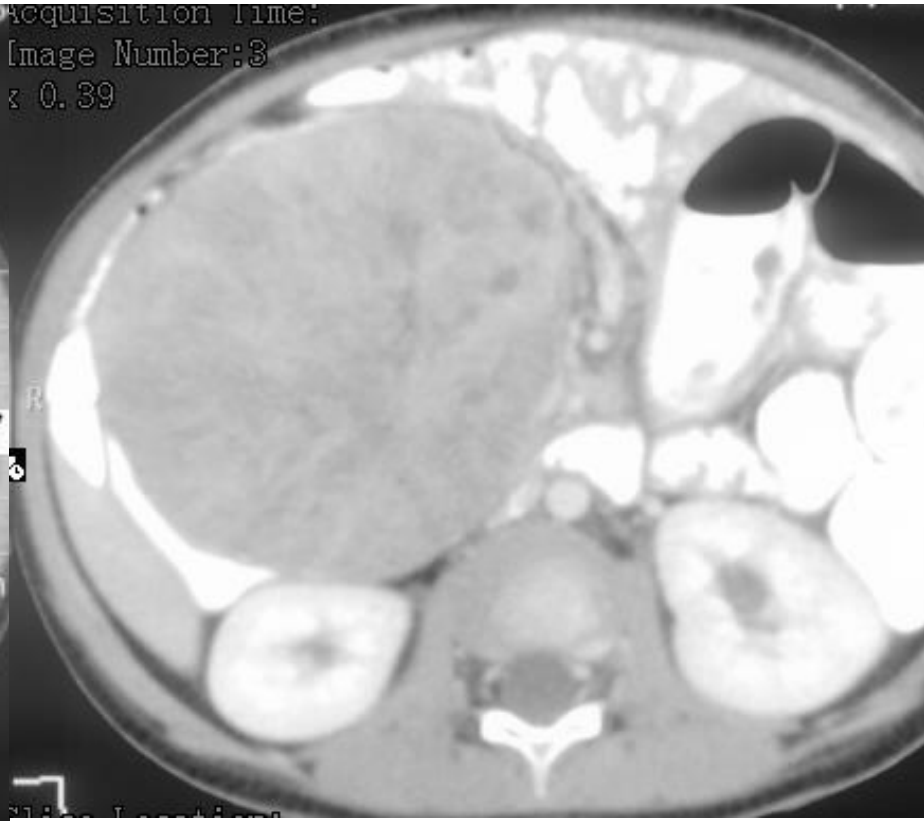




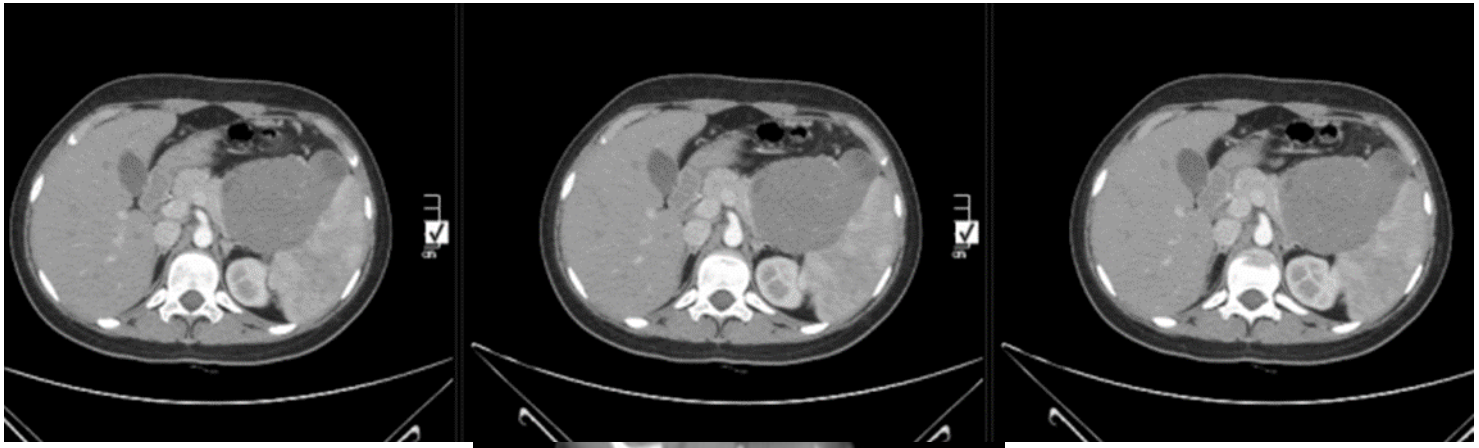
Pancreatic Masses

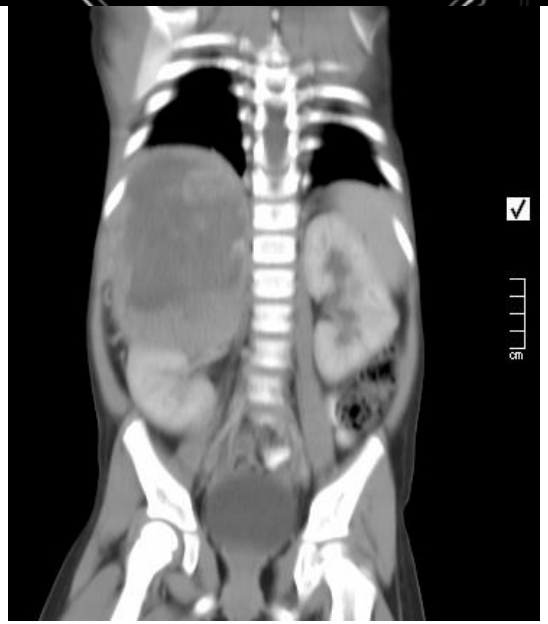
67088
Pancreatoblastoma.

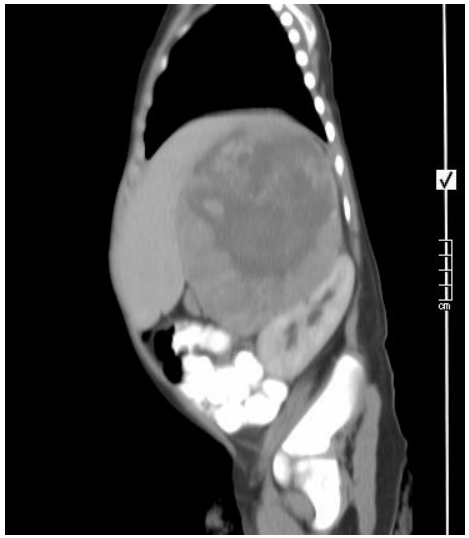




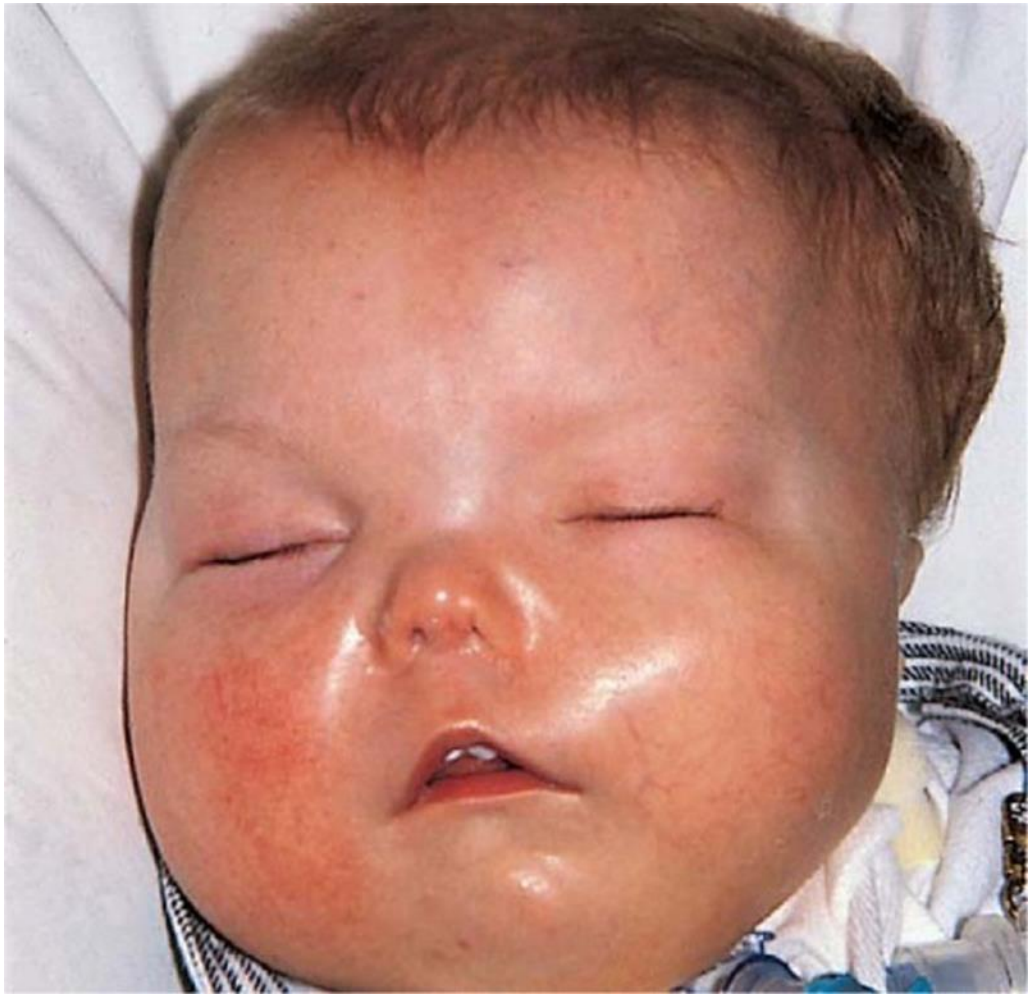
Pseudopapillary tumor of the pancreas







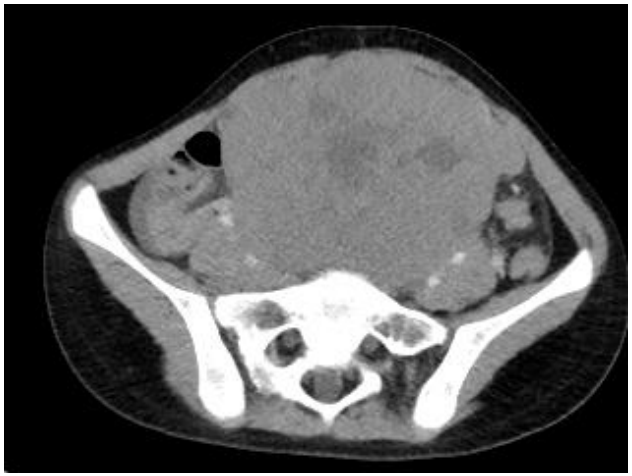
- 3 M old Developed tachypnea, SOB
- CT scan: lt renal mass extending to the chest.
- Developed more RD so intubated and referred to KHCC

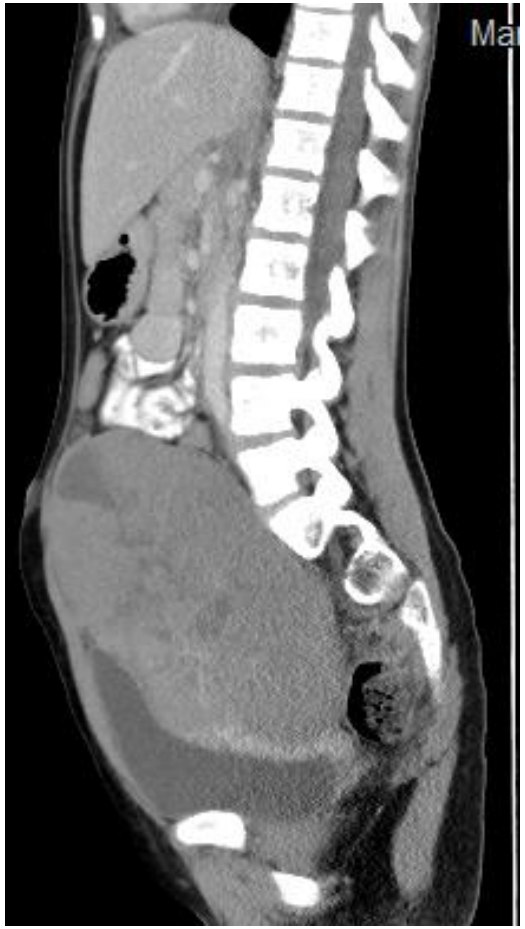


Abdominal Teratoma

- Mature teratoma.
- Immature teratoma.

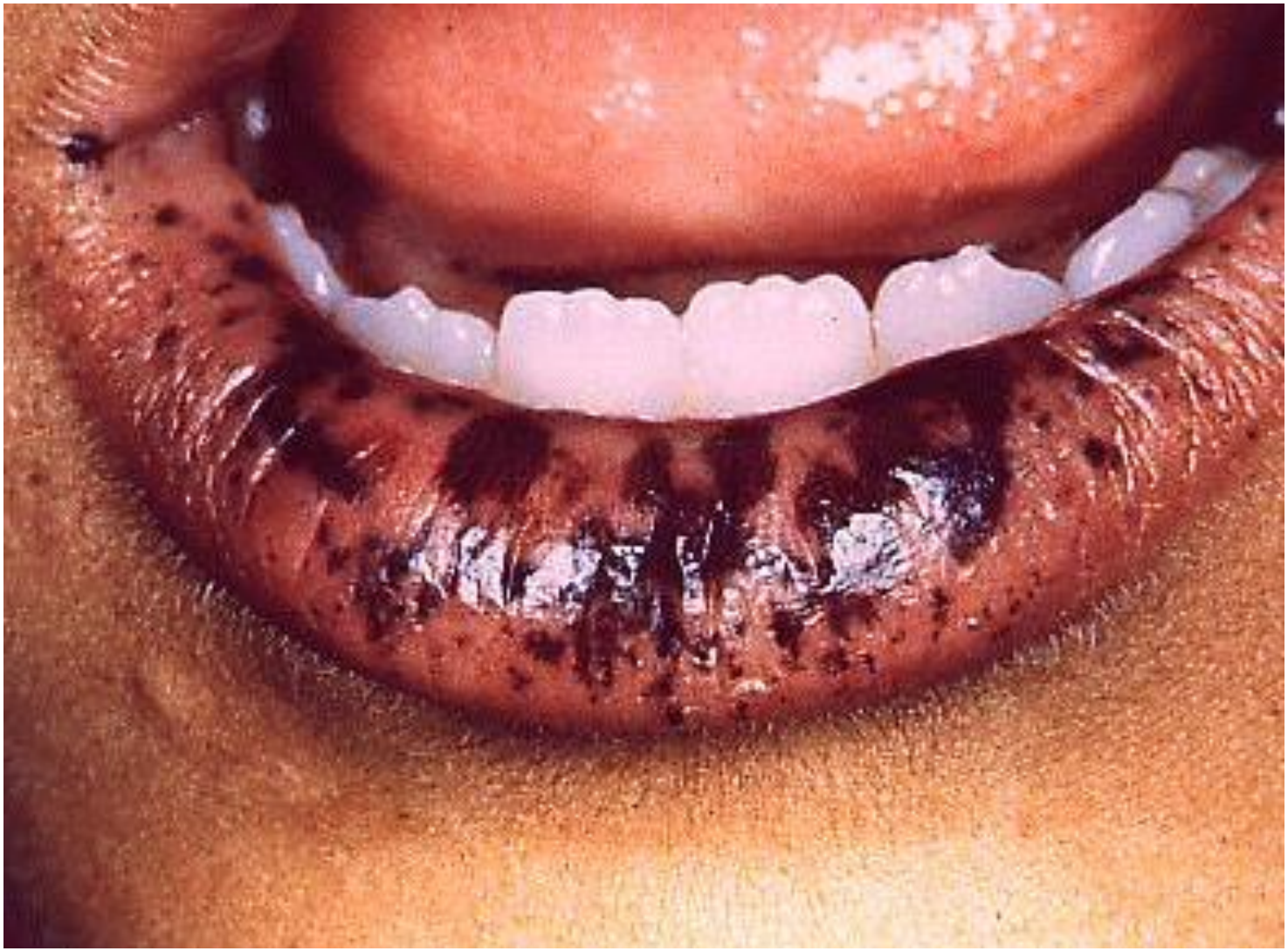
Ovarian masses: Dysgerminoma
AFP: ALP 766, LDH 2378



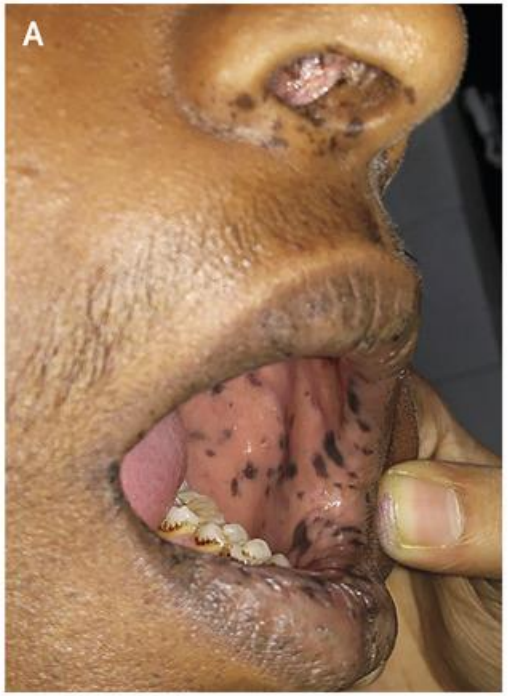


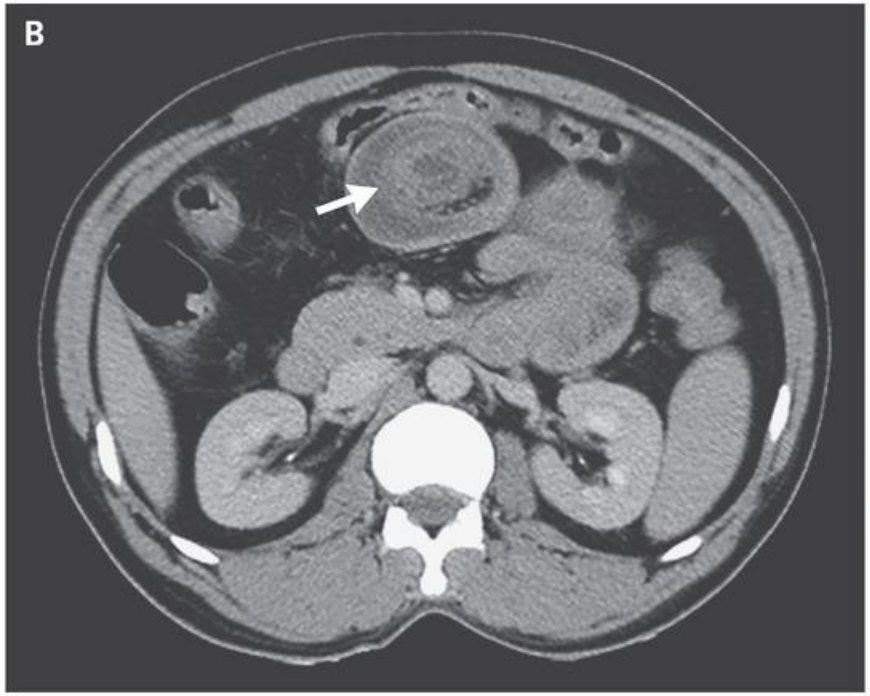
Tumor Marker	Associated Ovarian Tumors
AFP	Yolk sac tumor Immature teratoma Embryonal carcinoma Sertoli-Leydig cell tumor (rare)
β-hCG	Choriocarcinoma Embryonal carcinoma Dysgerminoma (rare)
LDH	Dysgerminoma
CA-125	Epithelial tumors
Inhibin	Granulosa cell tumor

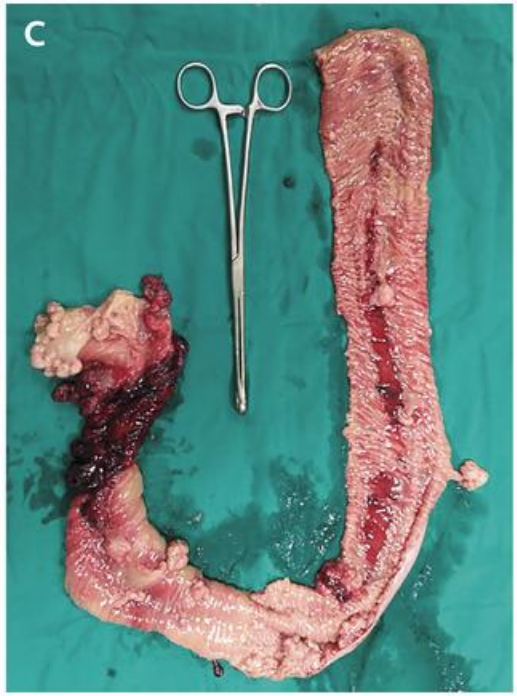
Rectal bleeding, Dx?



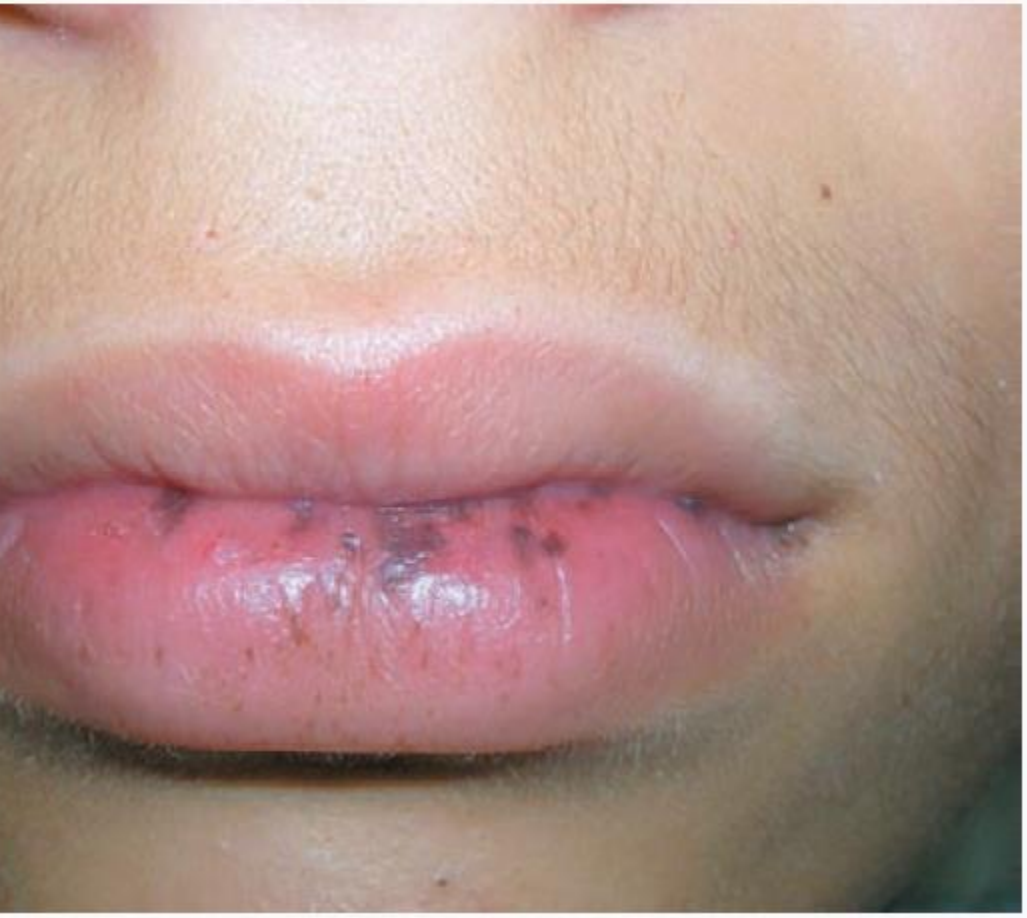
PEUTZ-JEGHERS SYNDROME
HEREDITARY INTESTINAL POLYPOSIS

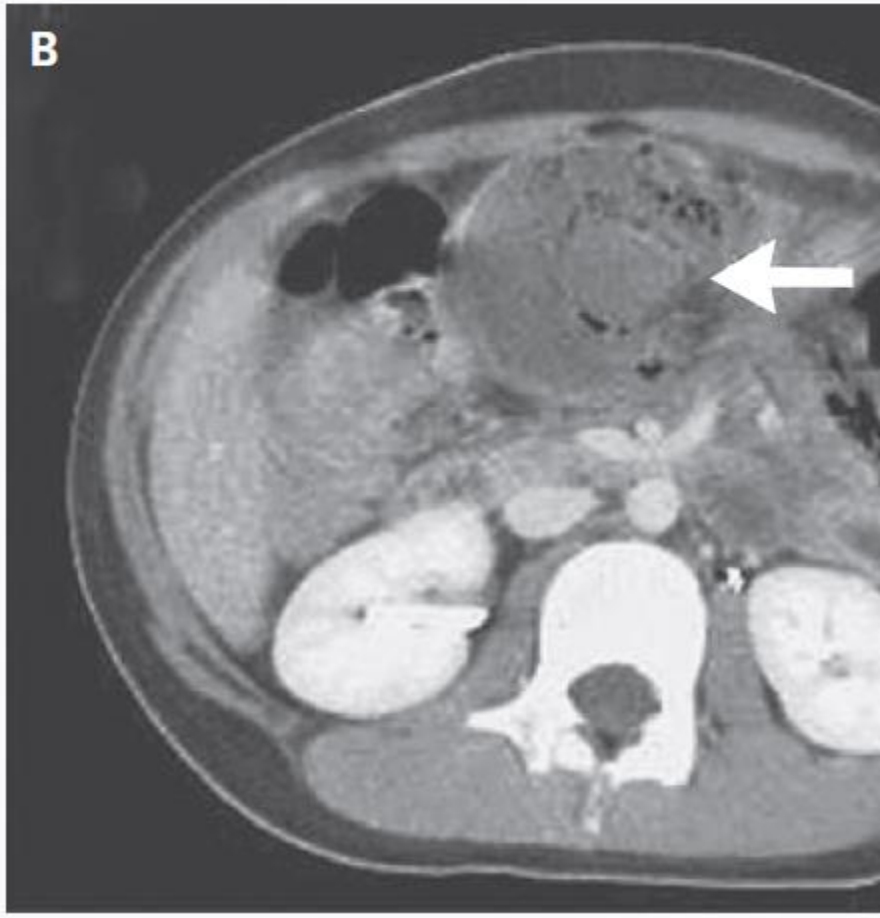






Peutz–Jeghers Syndrome

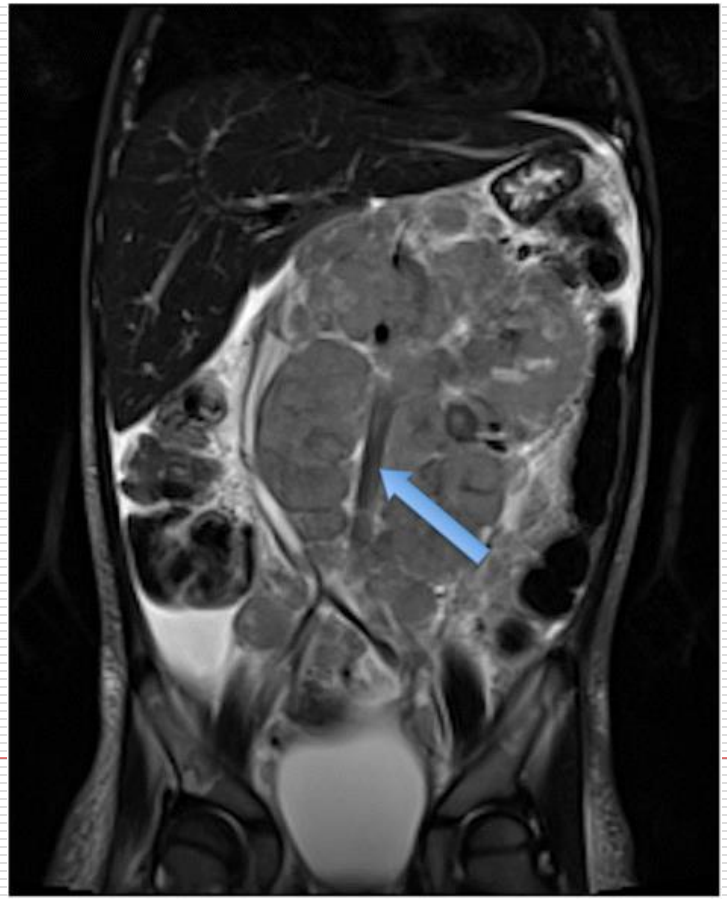




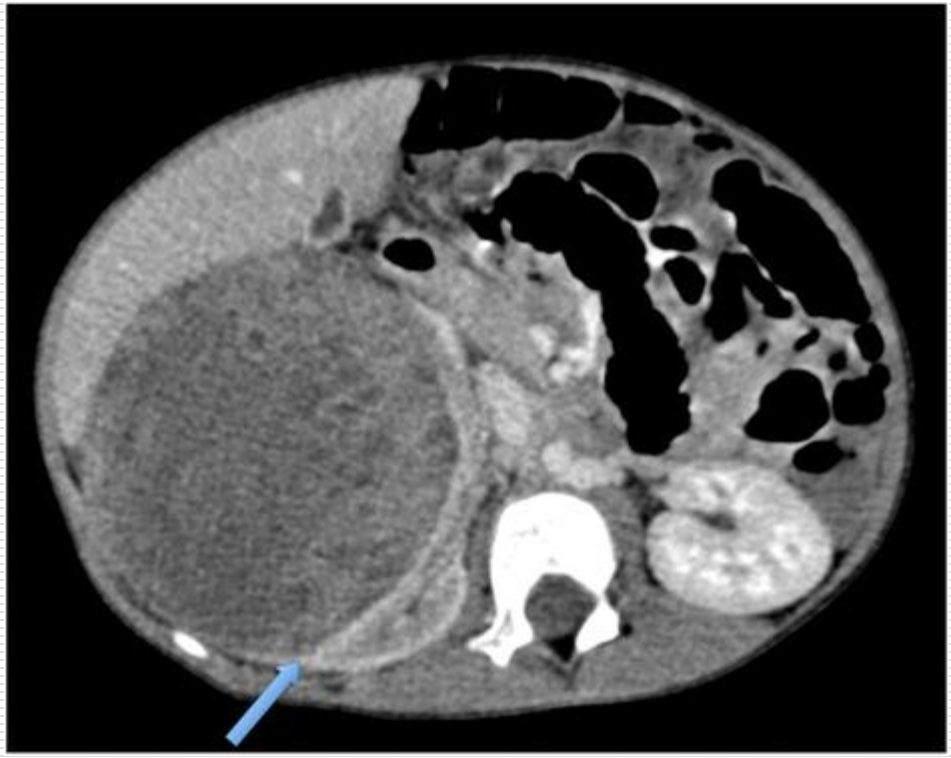
END

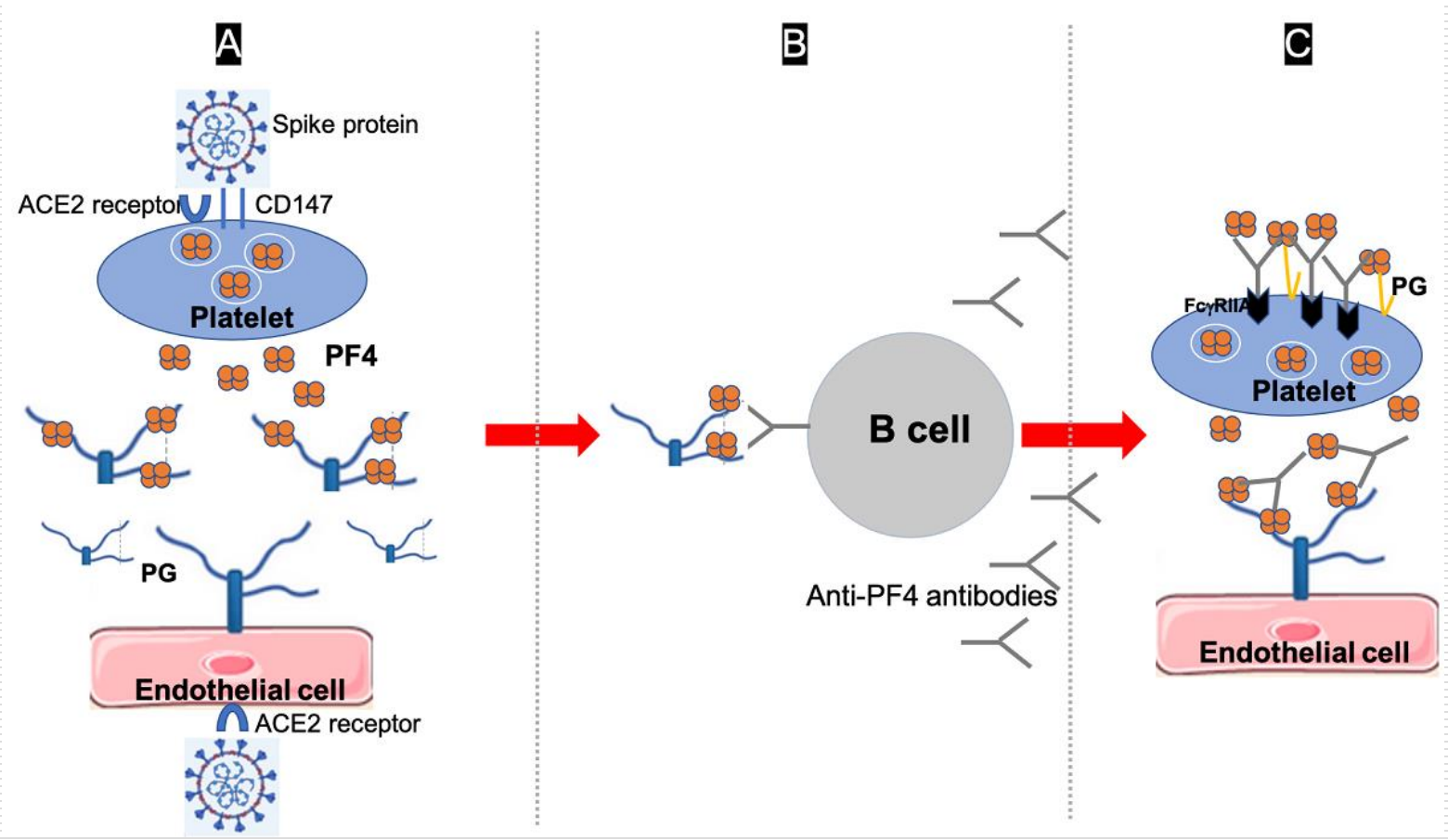
- **Chest x-ray of 3 year old girl showing thoracic NBL. Note erosions of the posterior 3 rd and 4 th ribs indicating a posterior mediastinal mass.**

Coronal T2 MR of a 3 year old boy with extensive abdominal NBL that crosses the midline and is here seen to encase the aorta (blue arrow).

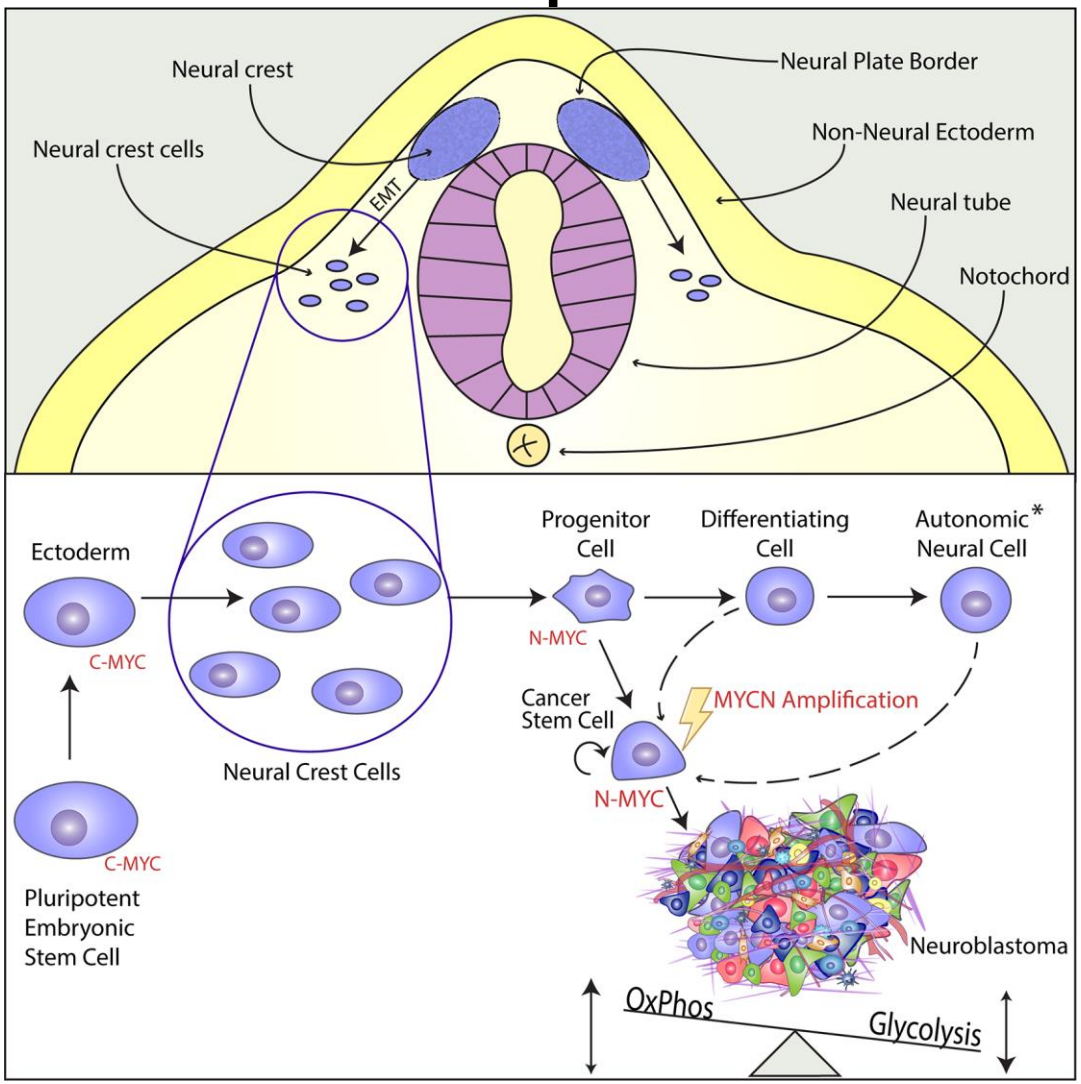


Axial CT of a 3 year old boy with right-sided Wilms tumour, again demonstrating the ‘claw sign’ (blue arrow).



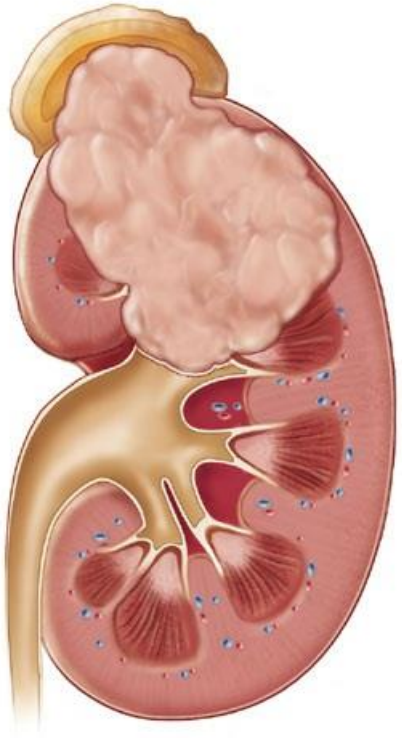

A
B
C
Spike protein
ACE2 receptor
CD147
Platelet
PF4
PG
Endothelial cell
ACE2 receptor
B cell
Anti-PF4 antibodies
FcγRIIA
PG
Platelet
Endothelial cell

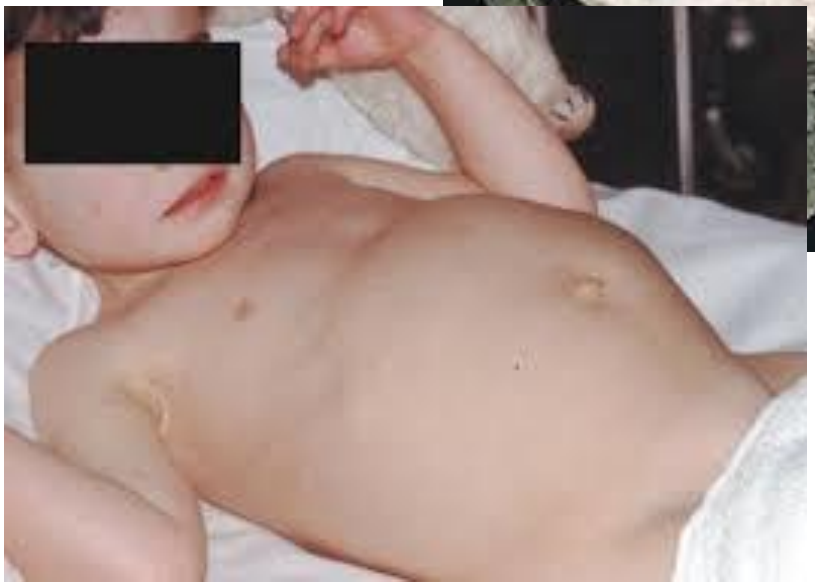
MYCN Function in Neuroblastoma Development



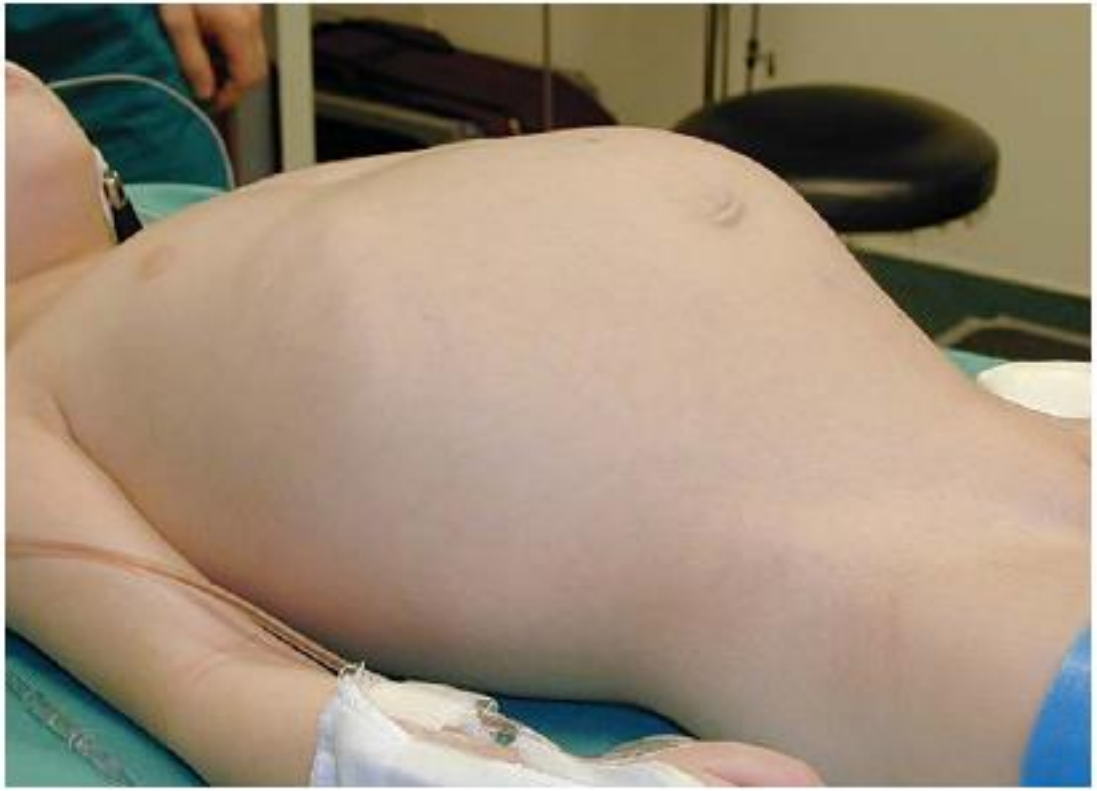
Cancer in Children

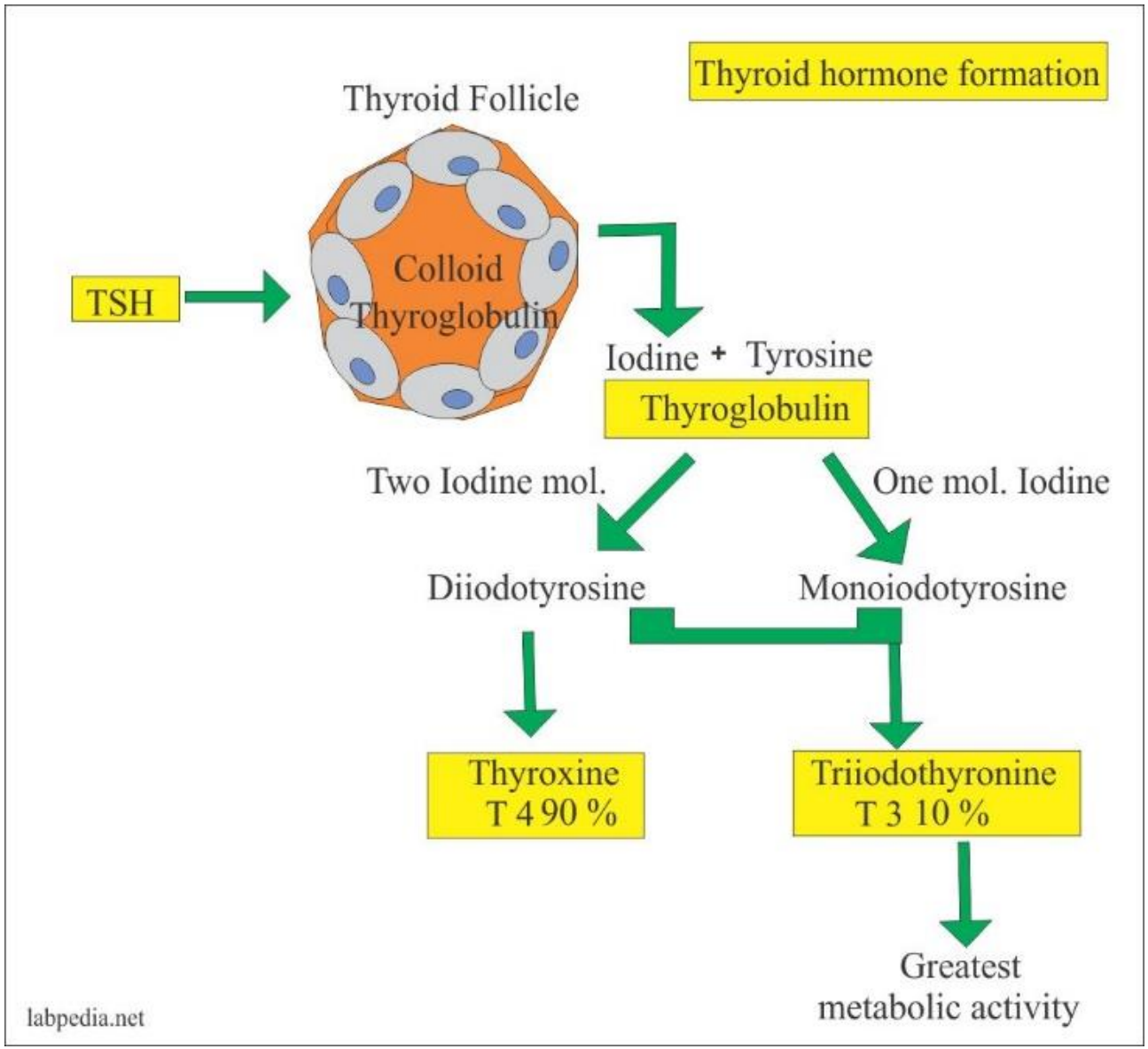
Cancer	Incidence	
Acute Leukemia	28%	
CNS tumors	21%	
Lymphomas	11%	
Neuroblastoma	7.5%	Abdominal Tumors
Wilms' tumor	6%	
Soft tissue sarcomas	6%	→ Soft tissue tumors
OS and Ewing's sarcoma	5%	→ Bone Tumors
Retinoblastoma	3%	→ Eye tumors
Others	12.5%	

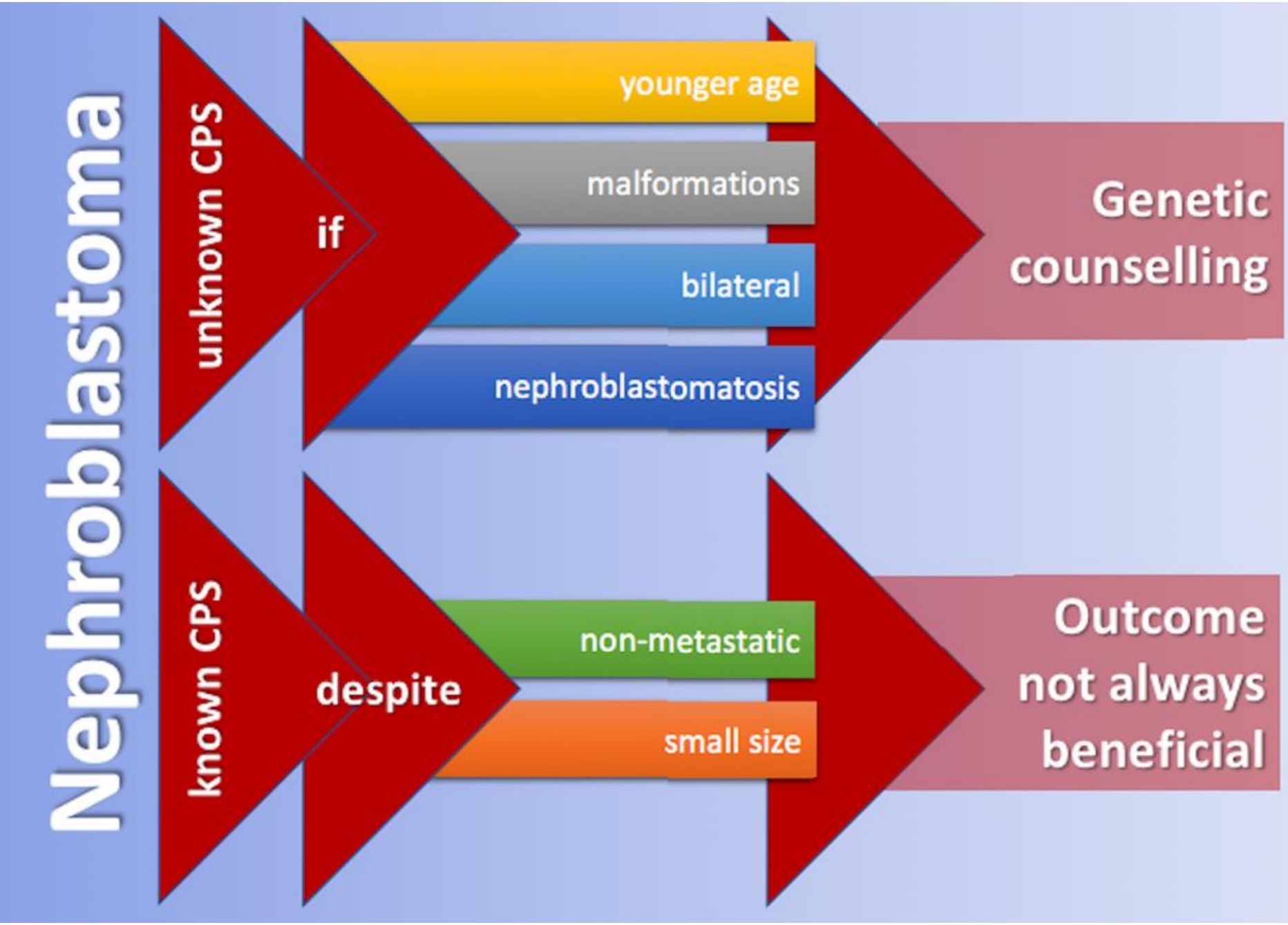




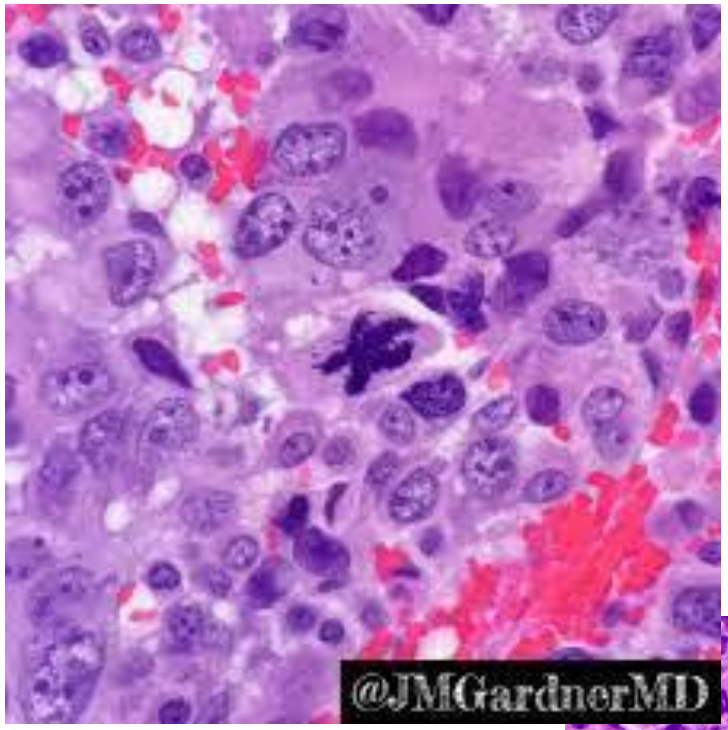
Treatment

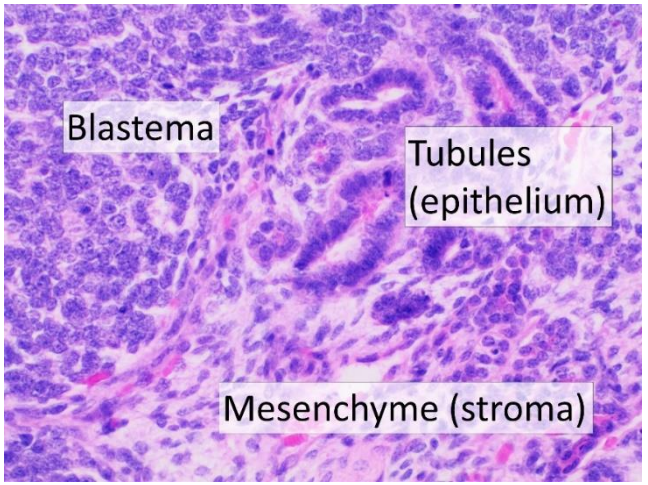


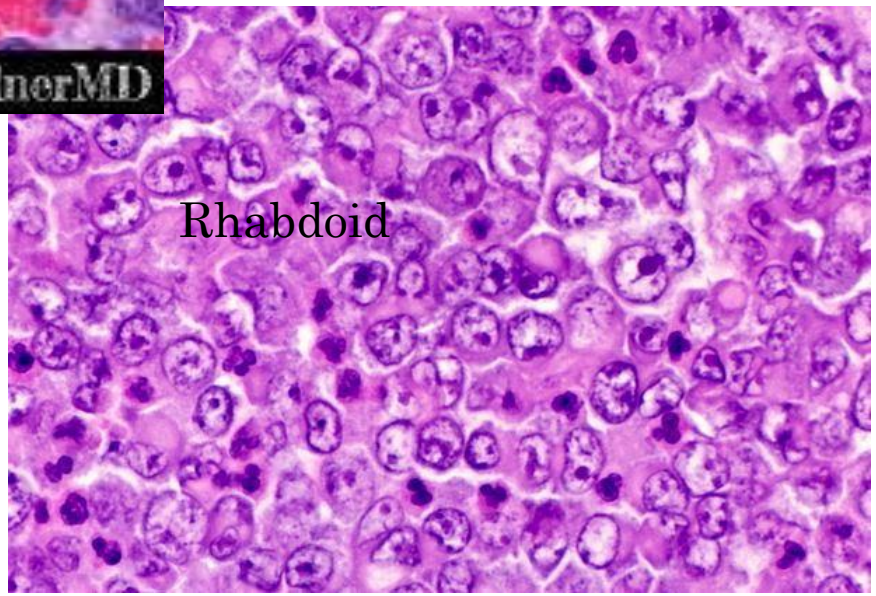

Thyroid hormone formation
Thyroid Follicle
TSH
Colloid
Thyroglobulin
Iodine + Tyrosine
Thyroglobulin
Two Iodine mol.
One mol. Iodine
Diiodotyrosine
Monoiodotyrosine
Thyroxine
T 4 90 %
Triiodothyronine
T 3 10 %
Greatest
metabolic activity
labpedia.net

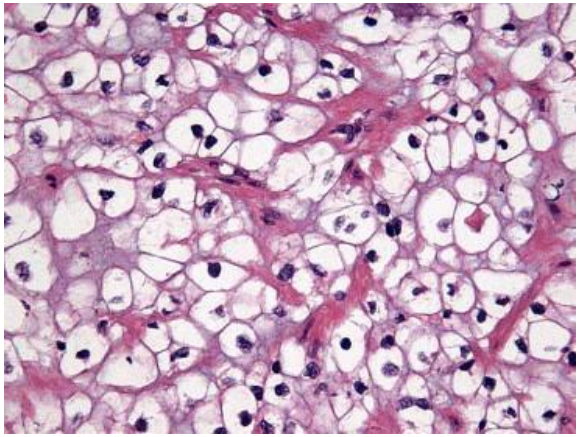

Nephroblastoma
unknown CPS
if
younger age
malformations
bilateral
nephroblastomatosis
Genetic counselling
known CPS
despite
non-metastatic
small size
Outcome not always beneficial

WT : DA 174878









CCSK

INRG Pre-Treatment Classification Schema*

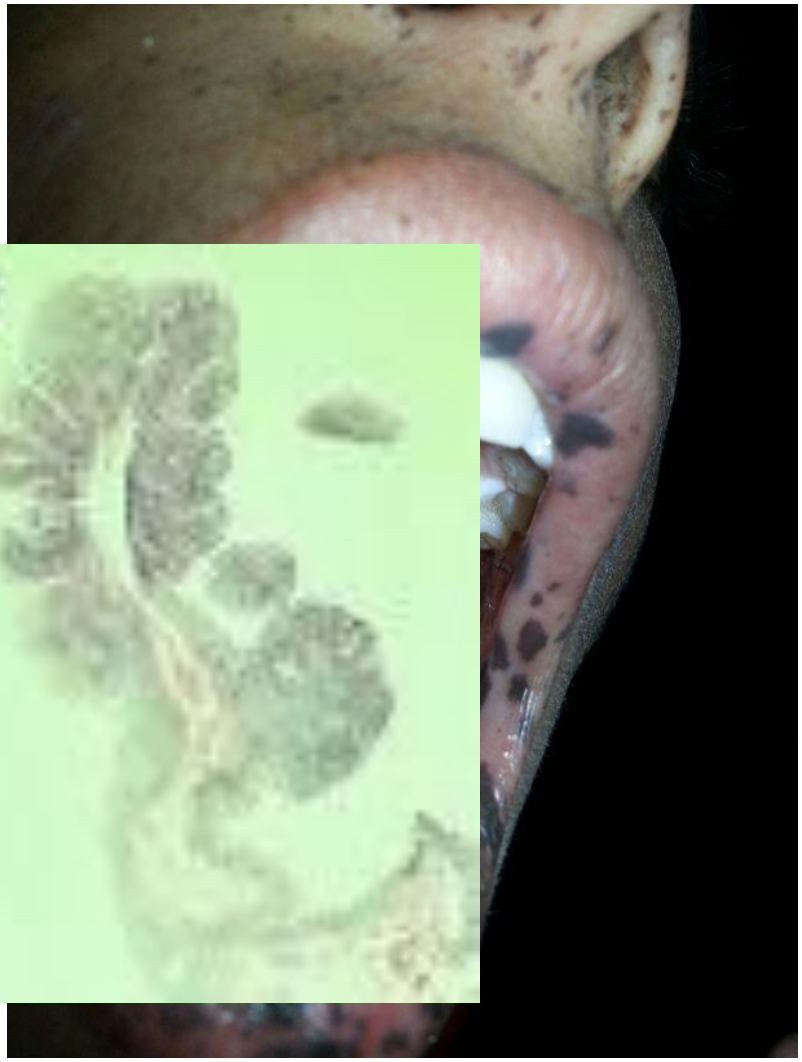
INRG Stage	Age	Histology/Grade of Tumor Differentiation	*MYCN* Status	11q aberration	Ploidy	Risk Group
L1/L2		GN maturing; GNB intermixed				Very Low
L1		Any except GN maturing or GNB intermixed	Not Amplified			Very Low
			Amplified			High
L2	<18 mo	Any except GN maturing or GNB intermixed	Not Amplified	No		Low
				Yes		Intermediate
	=18 mo	GNB nodular, differentiating NB, differentiating	Not Amplified	No		Low
				Yes		Intermediate
		GNB nodular, poorly differentiated or undifferentiated NB, poorly differentiated or undifferentiated	Not Amplified			Intermediate
			Amplified			High
M	<18 mo		Not Amplified		Hyperdiploid	Low
	<12 mo		Not Amplified		Diploid	Intermediate
	12 mo - <18 mo		Not Amplified		Diploid	Intermediate
	<18 mo		Amplified			High
	=18 mo					High
MS	<18 mo		Not Amplified	No		Very Low
				Yes		High
			Amplified			High

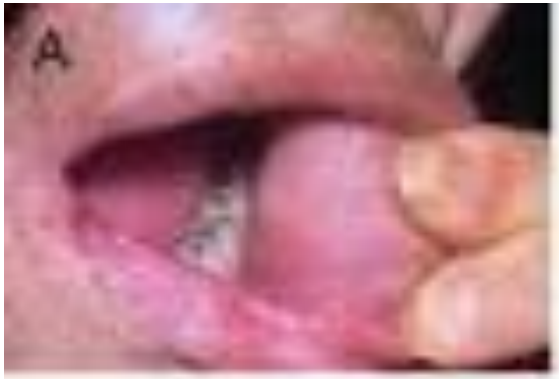
Abbreviations: GN = Ganglioneuroma, GNB = Ganglioneuroblastoma, NB = Neuroblastoma, L1 = Localized tumor confined to one body compartment with absence of image-defined risk factors (IDRFs), L2 = Locoregional tumor with presence of one or more IDRFs, M = Distant metastatic disease (except stage MS), MS = Metastatic disease confined to skin, liver, and/or bone marrow in children <18 months old, *Table adapted from Cohn et al., 2009

NEUROBLASTOMA
Biology

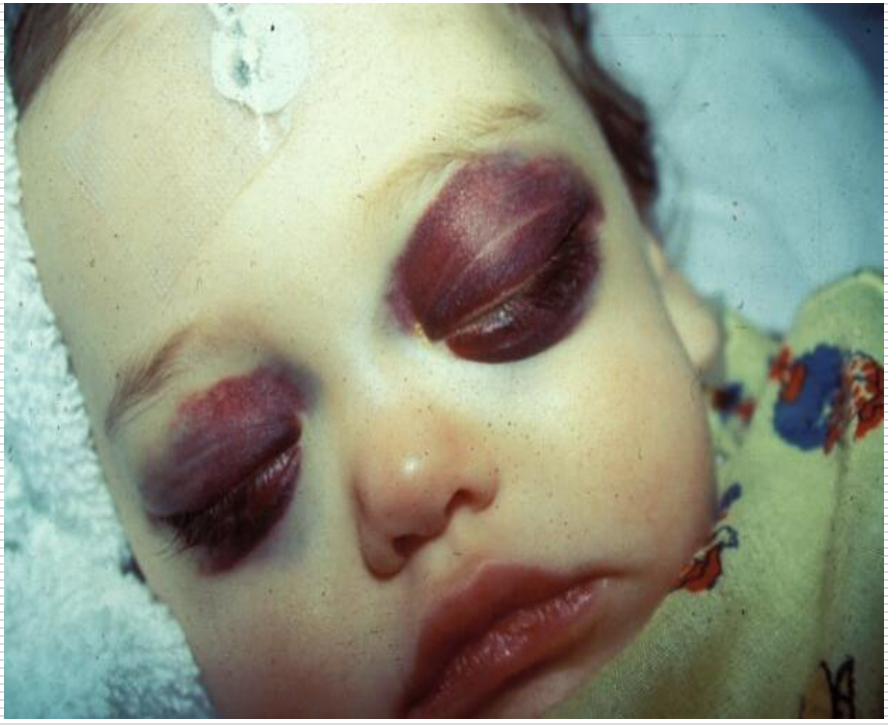
Gain of genetic material	Loss of genetic material	Alterations in gene expression
⇩	⇩	⇩
Amplification and Over-expression of oncogenes	Tumor suppressor genes	Aberrant development
Amplification *MYCN*	1 p-	"Neurotrophin signaling pathways"
17 q+	11q-	Over-expresion of drug-resistance genes
DNA content (ploidy)	14q-	

PEUTZ-JEGHERS SYNDROME HEREDITARY INTESTINAL POLYPOSIS

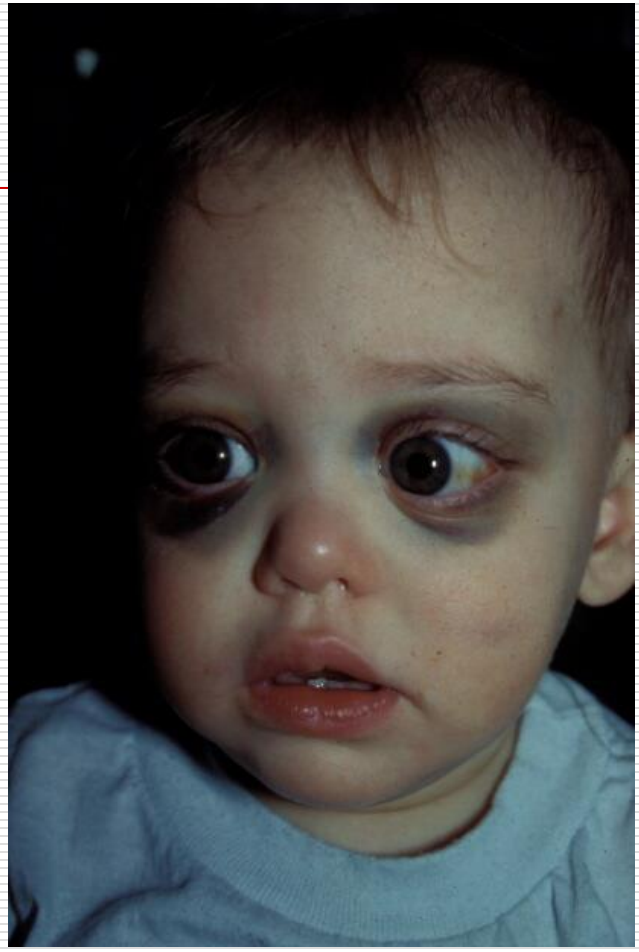




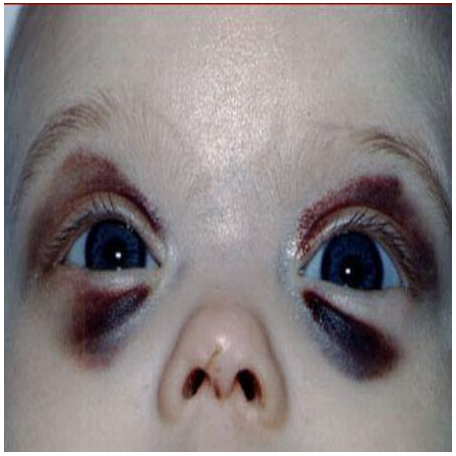
More Periorbital Ecchymoses of Neuroblastoma

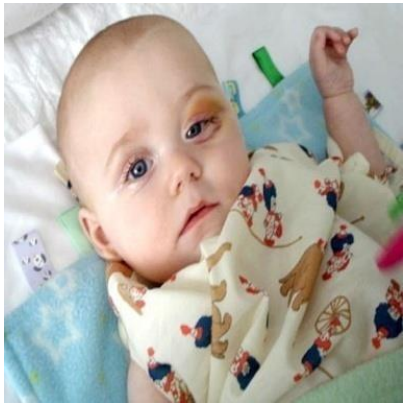


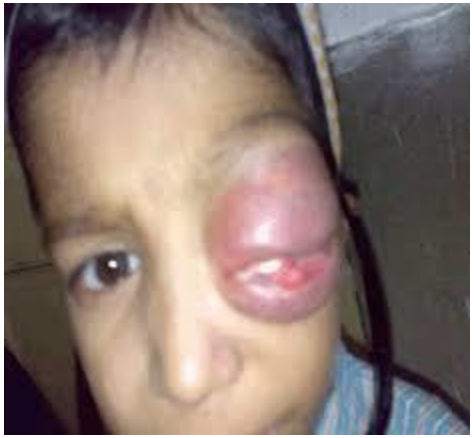
13 months old at diagnosis

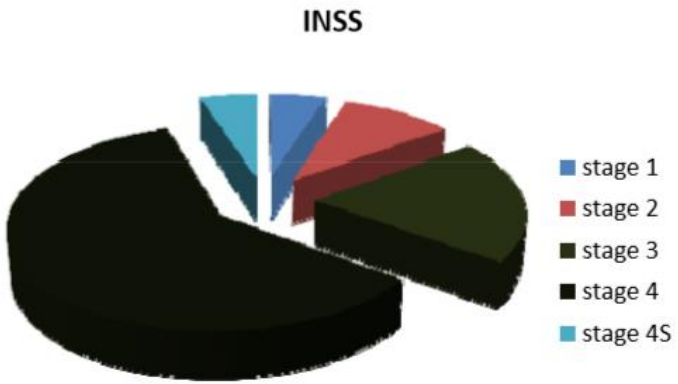


1 month into therapy





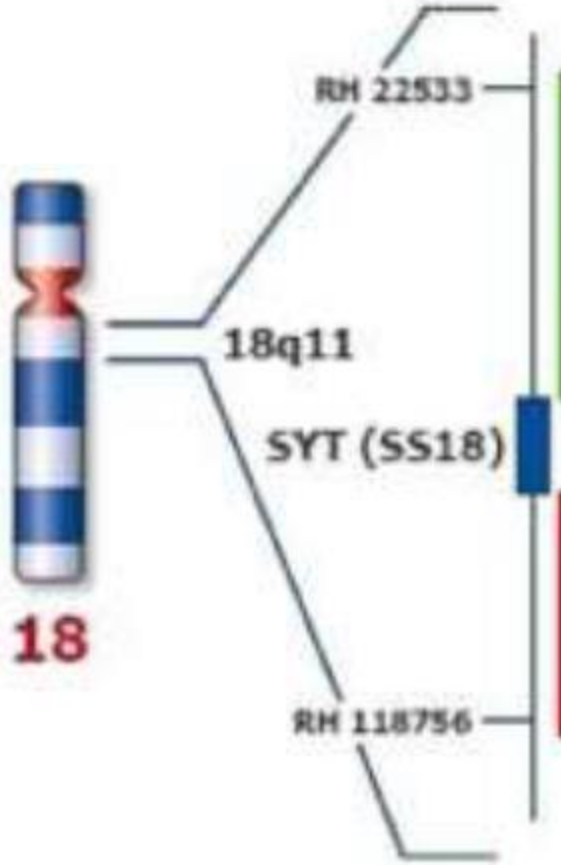




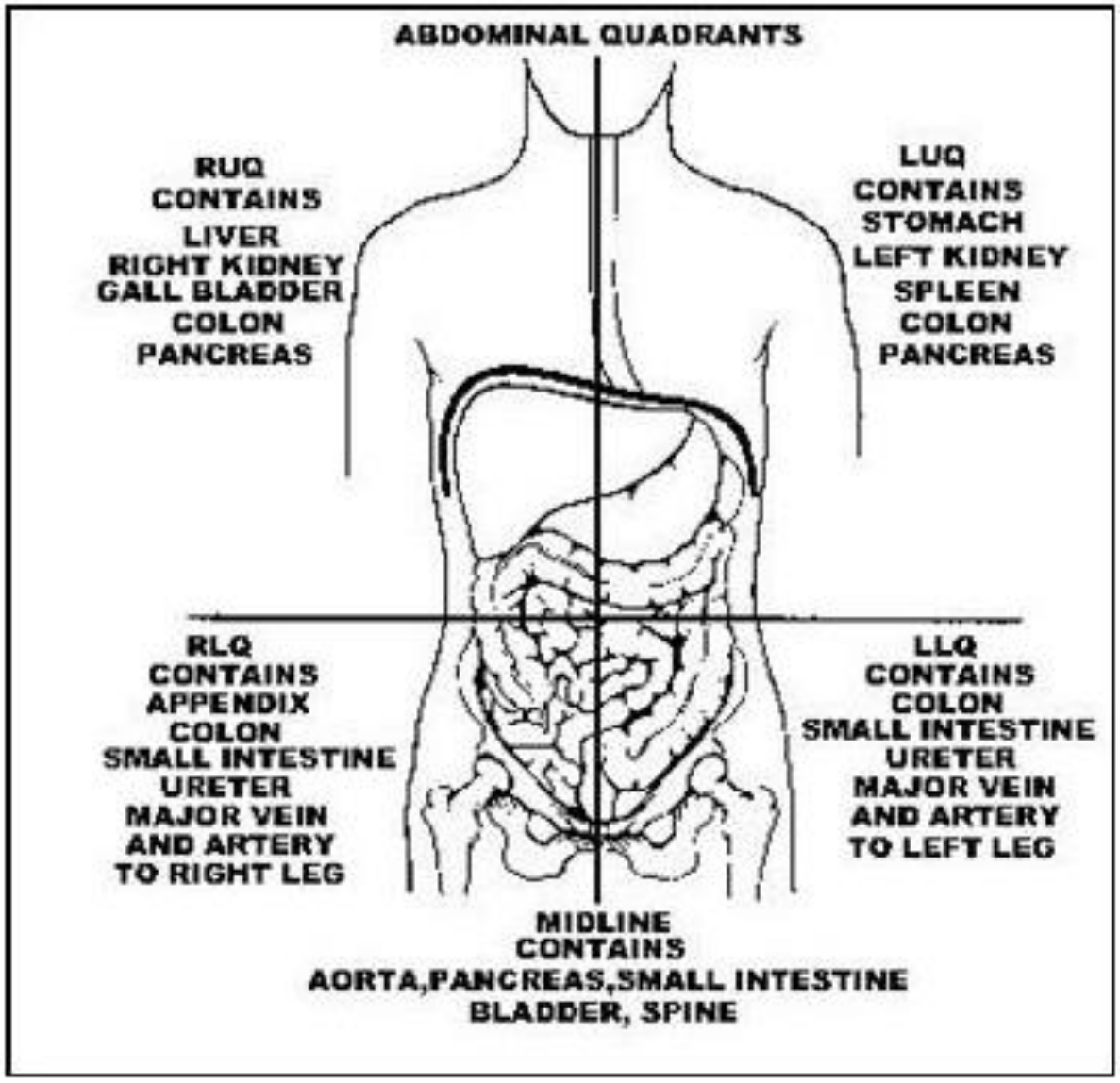
In abdomen (65%), adrenal in children (40%) in infants (25%).

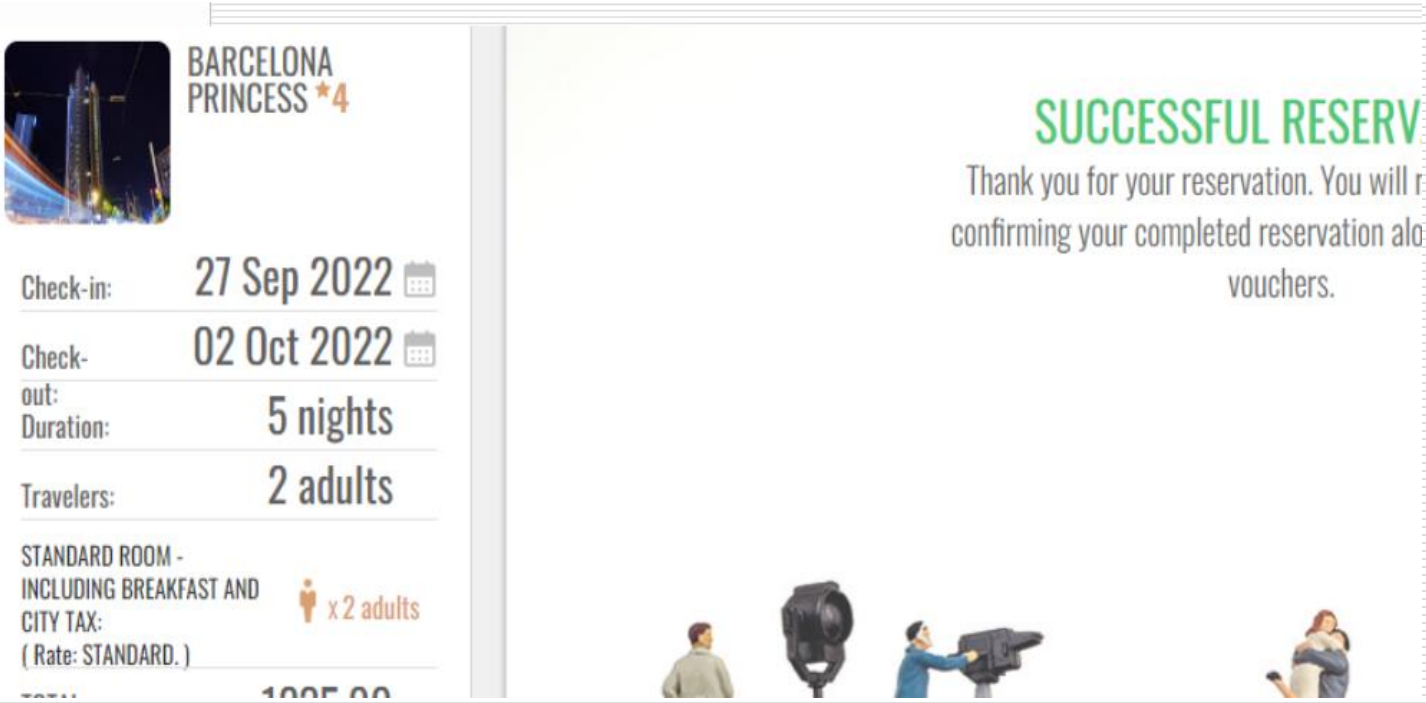
Majority diagnosed by the age of 5 years.

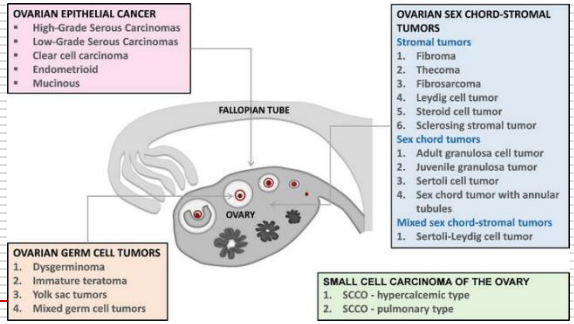
: SYT (18q11) probe kreatech diagnostics

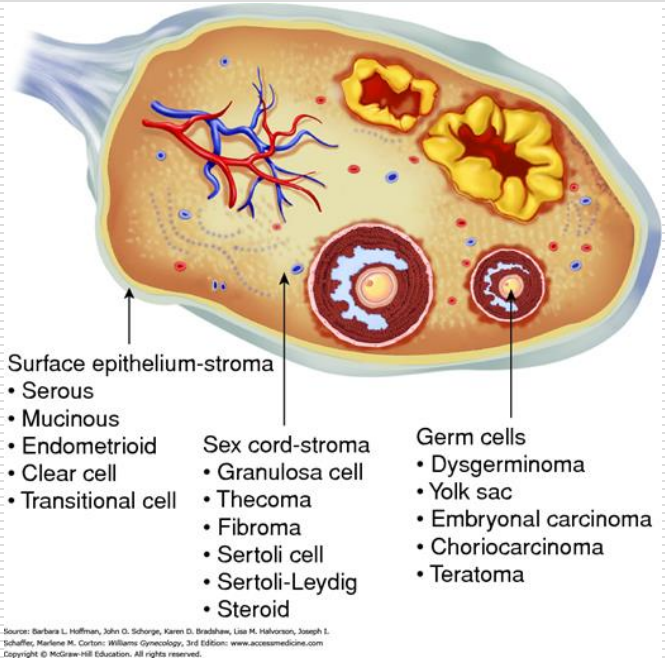


: In 18q11 region (SYT gene), t(X;18) related breaking is present (positive).


ABDOMINAL QUADRANTS
RUQ
CONTAINS
LIVER
RIGHT KIDNEY
GALL BLADDER
COLON
PANCREAS
LUQ
CONTAINS
STOMACH
LEFT KIDNEY
SPLEEN
COLON
PANCREAS
RLQ
CONTAINS
APPENDIX
COLON
SMALL INTESTINE
URETER
MAJOR VEIN
AND ARTERY
TO RIGHT LEG
LLQ
CONTAINS
COLON
SMALL INTESTINE
URETER
MAJOR VEIN
AND ARTERY
TO LEFT LEG
MIDLINE
CONTAINS
AORTA,PANCREAS,SMALL INTESTINE
BLADDER, SPINE


BARCELONA
PRINCESS *4
Check-in: 27 Sep 2022
Check-out: 02 Oct 2022
Duration: 5 nights
Travelers: 2 adults
STANDARD ROOM - INCLUDING BREAKFAST AND CITY TAX:
(Rate: STANDARD.)
x 2 adults
SUCCESSFUL RESERV
Thank you for your reservation. You will r
confirming your completed reservation alo
vouchers.


OVARIAN EPITHELIAL CANCER
High-Grade Serous Carcinomas
Low-Grade Serous Carcinomas
Clear cell carcinoma
Endometrioid
Mucinous
OVARIAN SEX CHORD-STROMAL TUMORS
Stromal tumors
1. Fibroma
2. Thecoma
3. Fibrosarcoma
4. Leydig cell tumor
5. Steroid cell tumor
6. Sclerosing stromal tumor
Sex chord tumors
1. Adult granulosa cell tumor
2. Juvenile granulosa tumor
3. Sertoli cell tumor
4. Sex chord tumor with annular tubules
Mixed sex chord-stromal tumors
1. Sertoli-Leydig cell tumor
FALLOPIAN TUBE
OVARY
OVARIAN GERM CELL TUMORS
1. Dysgerminoma
2. Immature teratoma
3. Yolk sac tumors
4. Mixed germ cell tumors
SMALL CELL CARCINOMA OF THE OVARY
1. SCCO - hypercalcemic type
2. SCCO - pulmonary type


Surface epithelium-stroma
• Serous
• Mucinous
• Endometrioid
• Clear cell
• Transitional cell
Sex cord-stroma
• Granulosa cell
• Thecoma
• Fibroma
• Sertoli cell
• Sertoli-Leydig
• Steroid
Germ cells
• Dysgerminoma
• Yolk sac
• Embryonal carcinoma
• Choriocarcinoma
• Teratoma
Source: Barbara L. Hoffman, John O. Schorge, Karen D. Bradshaw, Lisa M. Halvorson, Joseph I. Schaffer, Marlene M. Corton: Williams Gynecology, 3rd Edition: www.accessmedicine.com
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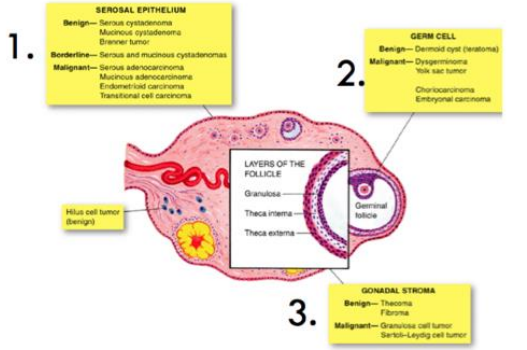
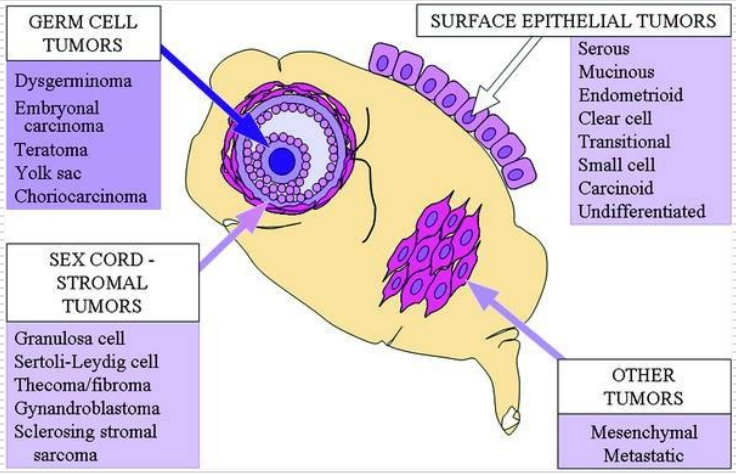

1.
SEROSAL EPITHELIUM
Benign— Serous cystadenoma
Mucinous cystadenoma
Brenner tumor
Borderline— Serous and mucinous cystadenomas
Malignant— Serous adenocarcinoma
Mucinous adenocarcinoma
Endometrioid carcinoma
Transitional cell carcinoma
2.
GERM CELL
Benign— Dermoid cyst (teratoma)
Malignant— Dysgerminoma
Yolk sac tumor
Choriocarcinoma
Embryonal carcinoma
LAYERS OF THE FOLLICLE
Granulosa
Theca interna
Theca externa
Germinal follicle
Hilus cell tumor (benign)
3.
GONADAL STROMA
Benign— Thecoma
Fibroma
Malignant— Granulosa cell tumor
Sertoli-Leydig cell tumor


GERM CELL TUMORS
Dysgerminoma
Embryonal carcinoma
Teratoma
Yolk sac
Choriocarcinoma
SURFACE EPITHELIAL TUMORS
Serous
Mucinous
Endometrioid
Clear cell
Transitional
Small cell
Carcinoid
Undifferentiated
SEX CORD - STROMAL TUMORS
Granulosa cell
Sertoli-Leydig cell
Thecoma/fibroma
Gynandroblastoma
Sclerosing stromal sarcoma
OTHER TUMORS
Mesenchymal
Metastatic

Wt embryology