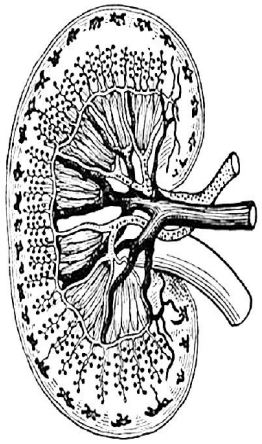
REN 0110
1st Year MBBS

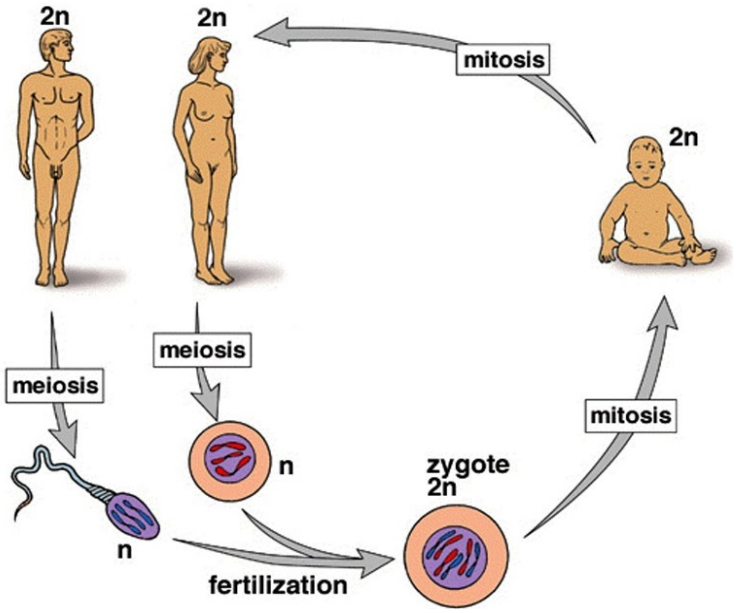


Study Guide

THE RENAL & REPRODUCTION MODULE

1st Year MBBS

Spiral 01: Module 10



Department of Medical Education
Azad Jammu & Kashmir Medical College
Muzaffarabad, Azad Kashmir
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Contents

1. MODULE TEAM

1. Prof. Dr. Muhammad Ayub	(Planner)
2. Dr. Mohshin Shakil	(Coordinator)
3. Prof. Alam Khan	(Member)
4. Dr. Zahid Azeem	(Member)
5. Dr. Ali Arshad Abbasi	(Member)
6. Dr. Asad Bilal Arif	(Member)
7. Dr. Ijaz Anwar	(Member)
8. Dr. Fauzia Aihtezaz	(Member)

Caution

Eighty Percent (80%) attendance is mandatory to appear in Modular / Professional / University Examination as per Pakistan Medical and Dental Council (PM&DC) regulation.

2. RATIONALE

The Renal System is concerned with the maintenance of homeostasis by formation and excretion of urine. The Reproduction System is associated with the reproductive, developmental and genetic processes that contribute to the development of a healthy individual.

Hazardous waste products, drugs, toxins, excessive amounts of water and electrolytes are excreted by kidneys, then carried to the exterior through a system of tubular passages and reservoir. The conductive pathway of urinary system is non-absorptive & non- secretary, the urine passes through it and stored in urinary bladder without any further change in its composition so making a willful voiding possible that gives a sense of hygiene and social dignity.

Previously, these systems were included in the 1st spiral as two distinct modules. Recently the Curriculum Committee of AJKMC decided to integrate these two modules after considering the overlapping of the 'core contents' identified for these closely related systems, feedbacks from the students and suggestions of the faculty. So, a new integrated module 'The Renal & Reproduction Module' is introduced in 1st spiral of the 'AJKMC Class 2020' for a better content delivery & learning opportunities with hope of saving some valuable time in curriculum map.

'The Reproductive System' shares embryological development and reproductive passages with 'The Urinary Systems'. It makes one system more susceptible to many diseases affecting the other one. The role of kidney and rest of the urinary system is important in maintaining the overall health and wellbeing and the effects produced by Kidney failure are not compatible with life. Similarly, failure of reproductive system can lead to sexual dysfunction and infertility.

3. MODULE OUTCOMES

On completion of the 'Renal & Reproduction Module', students should have learned the necessary knowledge of normal structures and functions of 'Urinary and Reproductive System' in clinical context. They should be able to correlate the anatomic, physiological and biochemical basis of relevant signs & symptoms. They should suggest and interpret the specific laboratory and radiological investigations. They should also have the skills of relevant history taking, physical examination, simple procedures and acquired a measureable change in professional behavior. They should have a foundation for understanding the clinical basis of different diseases involving Urinary & Reproductive Systems

4. ORGANIZATION OF MODULE

The Renal & Reproduction Module consists of the themes based upon some real life situation. The module will apply the different modes of instructions, major emphasis will be on the discussions, analysis and deductions; all by the learners, who will be facilitated and guided by the faculty.

5. CONTENT DELIVERY

Entire Curriculum will be delivered by the 'clinical case scenarios', each related to a theme. Please, read the cases and learning objectives of the theme that you are supposed to encounter next day. Try to understand and explain the cases to yourself and read the relevant information.

Following learning/teaching strategies will be employed to discuss the cases.

5.1. SMALL GROUP DISCUSSION (SGD)

Main bulk of the course content will be delivered in small group session' (SGDs). Each theme has an associated case. These cases will be the center, around which the learning will take place. Depending upon the case, you might be required to deduce objectives or learning issues. Every group will have a facilitator assigned to it. Small group discussions will be followed by a wrap up session.

5.2. LARGE GROUP INTERACTIVE SESSION (LGIS)

Large group instruction will be employed at time. Attend large group session to resolve queries, conceptual learning and to standardize learning of all groups. Read the cases and learning objectives of the theme which you are supposed to encounter next day. Understand and explain the cases to yourself and read the relevant information

5.3. VIDEOS

Video Demonstration on history taking and Urethrocystoscopy, urethral catheterization.

5.4. HANDS ON ACTIVITIES/PRACTICAL

Practical activities, linked with case, will take place.

5.5. LABORATORY

Attend your schedule Lab and take advantage of the open times to continue study. Use your Labs to correlate text structures to actual specimen in Lab practice.

5.6. DIRECTED SELF LEARNING (DSL)

Few DSL sessions have been added in between to create an environment for you to search literature as well as to deduce and synthesize information from different sources to meet the learning objectives.

5.7. JOURNAL CLUB MEETING

Few Journal Club meetings are also schedule in the module.

6. ASSESSMENT

In this module, you will self-assess yourself frequently and will have few formative assessments. A Summative assessment will also hold at completion of the module: Knowledge, Skills and professional behavior will be assessed by 'Integrated Practical Assessment (IPA)', which will be held at the end of the block. The marks obtained will contribute 30% towards the end of year professional examination assessment.

7. TABLE OF SPECEFICATIONS (TOS)

S.No.	Themes	Percentage
1	**Puffiness & Edema**	**30%**
2	**Renal Pain & Ureteric Colic**	**20%**
3	**Oliguria & End stage Renal Disease**	**15%**
4	**Dysuria & Urinary Retention**	**10%**
5	**Infertility**	**15**
6	**Nipple discharge**	**10**
	Total	**100%**

8. THEMES & CORE CONTENTS

8.1. Puffiness & Edema (30%)

At the end of this theme learner should to be able to:

1. Describe the development of Kidney and its congenital anomalies (Poly cystic Kidney, Ectopic, Horseshoe, Agenesis, Crossed Ectopia)
2. Describe the mechanism of formation, storage and expulsion of urine.
3. Demonstrate topographic anatomy of urinary system.
4. Enlist blood vessels, nerves and lymph supply (BNL) (including intra renal branches of renal artery) of kidneys.
5. Mark on a diagram, the anterior and posterior relations of both kidneys.
6. Describe the internal anatomy of the kidney, cut section of the kidney-cortex, medulla, pyramid, papilla, pelvicalyceal system.
7. Draw & Label Microscopic picture of Kidney. Illustrate ultra-structure of nephron, specifying function of each part.
8. Describe Glomerular filtrate and its composition.
9. Define Glomerular Filtration Rate (GFR), describe how to measure GFR.
10. Describe the regulation of GFR and renal blood flow.

11. Discuss factors which affect GFR, Filtration Pressure, fraction,
12. Describe reabsorption of different substances along different parts of Nephron.
13. Define the transport across Renal Tubules.
14. Describe the mechanism of concentrated and diluted urine formation and role of various Hormones on nephron/collecting ducts.
15. Describe Counter Current Exchange/Multiplier mechanism.
16. Classify Proteins, enlist simple proteins and discuss Albumins.
17. Describe the laboratory methods to detect and isolate proteins.
18. Demonstrate proteinuria in a given sample of urine by Lab/Dipstix Method.
19. Describe the role of kidney in regulation of body fluid compartment and acid base balance.
20. Describe the role of kidney in regulation of osmolarity especially by Renin–Angiotensin system and Anti Diuretic Hormone.
21. Describe physiological basis of intra and extracellular edema.
22. Define; Puffiness/edema, Polyuria, oxaluria, Hematuria, Oliguria, Anuria, Glycosuria, Proteinuria and Becteriuria.
23. Procedures of Hemo /peritoneal dialysis.

8.2. Renal Pain & Ureteric Colic (20%)

At the end of this theme learner should to be able to:

1. Describe the development of Ureter, normal structure, Blood Supply, innervations, lymphatic drainage, functions and Congenital Anomalies.
2. Review the surface Anatomy of Urinary tract on Anterior/ Posterior Abdominal Wall.
3. Identify the relationship of structures in the Renal Hilum
4. Draw & Label histological picture of ureter.
5. Describe calcium and Phosphate metabolism and its role in Urinary stone formation.
6. Describe Uric Acid metabolism and its role in Urinary stone formation (Purine Catabolism and Uric acid formation).
7. Describe the four main types of renal stones and their pathogenesis.
8. Enlist important predisposing factors leading to the development of renal stones(Biochemical basis of renal stones)
9. Interpret salient features of the symptoms (Renal Pain and Ureteric colic)with relevant history of illness & examination of patient to identify tenderness and positive renal punch
10. Interpret imaging modalities use in the diagnosis of Renal Pathologies. (X-Ray KUB, IVU, Urethrogram, Ultrasonography KUB, Post Void Urine. CT Scan)

8.3. Oliguria & End Stage Renal Disease (15%)

At the end of this theme, learner should to be able to:

1. Describe Pressure Natriuresis and Pressure Diuresis Mechanisms.
2. Define Osmoreceptor cells, their types and location.
3. Describe Urea Cycle, its regulation and disposal of Ammonia from body.
4. Describe the formation of Creatinine and its relevance (Creatinine Clearance).
5. Define obligatory urine volume. Anticipate, what will happen if a person drinks sea water?

6. Describe the difference between Central and Nephrogenic Diabetes Inspidus.
7. Describe factors responsible for Hyperkalemia, Hypokalemia and Potassium distribution and excretion in body fluid.
8. Enlist the sites of Potassium reabsorption and discuss potassium excretion.
9. Explain the mechanisms involved in regulating sodium concentration and osmolarity of ECF.
10. Discuss the overview of acid base balance, define buffers, name buffer systems of the body and describe the mechanism of action of each buffer system of the body fluids.
11. Define acidosis and explain the mechanism of correction of metabolic acidosis and alkalosis.
12. Define Acute Renal Failure (ARF), Chronic Renal Failure (CRF) & Renal Replace Therapy.
13. Collect specimen, perform and interpret Urine Routine Examination (URE).
14. Enumerate and interpret Renal Function Tests (RFT).
15. Discuss the Ethics of Renal Transplantation.
16. Counsel the patient with "End Stage Renal Disease".
17. Discuss the ethics of terminal care & end of the life issues.

8.4. -Dysuria & Urinary Retention (10%)

At the end of the learning of this theme learner should:

1. Describe the formation of Uro-Genital Sinus and development of urinary bladder, prostate, urethra and associated anomalies of Urinary tract.
2. Describe the Gross Anatomy, Blood Supply, Nerve Supply, Relations and the Supports of the Urinary Bladder and Prostate**.**
3. Describe the Gross Anatomy, Blood Supply, Nerve Supply & relations of Urethra and differences in male & female urethra.
4. Describe the gross Anatomy, blood supply, nerve supply and lymphatic drainage of penis.
5. Identify the microscopic structure of urinary bladder, prostate and urethra.
6. Draw and label a diagram to show the microscopic structure of Urinary Bladder, Urethra and Prostate.
7. Illustrate the "Micturition Reflex", Pathways and centers of Micturition Reflex**.**
8. Define symptoms of urinary system diseases, Dysuria, Lower Urinary Tract Symptoms (LUTS) and Bladder Outlet Obstruction (BOO). (definitions of important terms)
9. Perform examination of urinary system on a simulated patient, dummy, model.
10. Demonstrate the procedure and precautions of urethral catheterization and skill to perform catheterization on manikins.

8.5- Infertility (15%)

At the end of theme student should be able to:

1. Relate the development of male and female reproductive system
2. Demonstrate the anatomy of Male and female reproductive system on dissected specimen/model
3. Perform the dissection of Pelvis and perineum
4. Enlist histological features of male and female reproductive system
5. Relate Bio-Synthesis, Regulation & Functions of Testosterone with infertility
6. Compare Formation, Fate & Actions of oestrogen & Progesterone.
7. Relate infertility with endocrine dysfunction

8. Evaluate infertility through investigative parameters
9. Demonstrate History taking and examination on SP for infertility
10. Investigate an infertile couple through a structured questionnaire.
11. Enlist three advanced reproductive techniques
12. Enlist imaging techniques to ascertain the causes of infertility
13. Perform counseling of an infertile couple

8.6- Nipple Discharge (10%)

At the end of theme student should be able to:

1. Illustrate the developmental features of breast
2. Demonstrate the anatomy of breast in relation to underlying structures
3. Enlist the histological features of breast on a given slide
4. Relate lymphatic drainage of breast with breast carcinoma
5. Illustrate the formation and transport of prolactin
6. Correlate the Physiological and Biochemical role of prolactin with breast development
7. Evaluate the function of hypothalamic pituitary axis for prolactin
8. Relate triple assessment of breast with breast lump
9. Enlist various imaging modalities for evaluation of Ca breast
10. Demonstrate surface marking of breast on manikins/skeleton/peer/SP
11. Perform self-examination of breast.

9. CLINICAL SCENARIO & CRITICAL QUESTIONS

9.1. Case 01: Puffy patient.

A 23-year-old man Raja Rahmat felt puffy, weak, and tired for several months. He suddenly noticed his urine had a red to brown discoloration and the volume was minimal. He went to the Nephrology OPD of AIMS hospital and the following data was obtained upon examination and investigations:

Hematology:

Serum sodium	125 mEq/L
Serum potassium	6 mEq/L
Serum Creatinine	2.6 mg/dL
BUN	24.0 mg/dL
pH (arterial)	7.32
Hematocric	25%

Urinalysis:

Appearance	Red to brown
Specific Gravity	1.025
Blood	Positive
Glucose	Negative

Protein	Mild

Renal Function Tests:

GFR	40 mL/min
Renal Blood Flow (RBF)	280 mL/min

Critical questions

1. What is the disorder of this individual?
2. What situation(s) predispose an individual to this disorder?
3. Define hyponatremia and hyperkalemia.
4. What is the cause of the hyponatremia and hyperkalemia?
5. Why is there blood in the urine?
6. How do the renal function tests for this individual compare to normal?
7. What caused the puffiness?
8. What type of treatment does this person need?
9. Is this person a candidate for dialysis?

9.2. Case 02: Renal Pain

A 45-year-old man Khani Zaman was referred to Urology OPD of AIMS hospital complaining of severe intermittent pain in right lumber area, radiating to lower abdomen and into the genital area. He also had chills, fever and nausea. He also noticed increased frequency of urination and hematuria. USG and X-ray findings indicated a 10 mm stones in the renal pelvis. Stone was removed by lithotripsy and on chemical examination, it was found to be a Calcium Oxalate stone. 24-hour urine analysis for Calcium was 300 mg/day. This Khani Zaman was encouraged to increase his water intake and slightly decrease his dietary calcium.

Critical questions

1. Khani Zaman is a calcium stone former and what is hereditary condition known as Idiopathic hypercalciuria?
2. How do stones, or calculi, form?
3. Are calculi formed from minerals or compounds other than calcium? If so, give examples?
4. List some methods adopted for removing renal calculi?

9.3. Case 03: Renal failure

A 35 year old Asif Habib, who is a known diabetic on irregular treatment for 13 years, has developed Renal Failure. While waiting for a kidney transplant, he is on maintenance hemodialysis; five to eight hours, three times in each week. He is on a diet restricted in sodium (500 mg/day), potassium (2.6 g/day) and protein as well as his usual diabetic diet. He has a shunt (arterio-venous fistula) in his left wrist to allow for easy hookup to the dialysis machine.

Prior to hemodialysis, his representative blood values are the following:

Serum sodium	120 mEq/L
Serum potassium	6.4 mEq/L
Serum chloride	102 mEq/L

Serum Creatinine	16 mg/dl
Hematocric	24%

The dialysis fluid in the kidney dialysis machine contains the following:

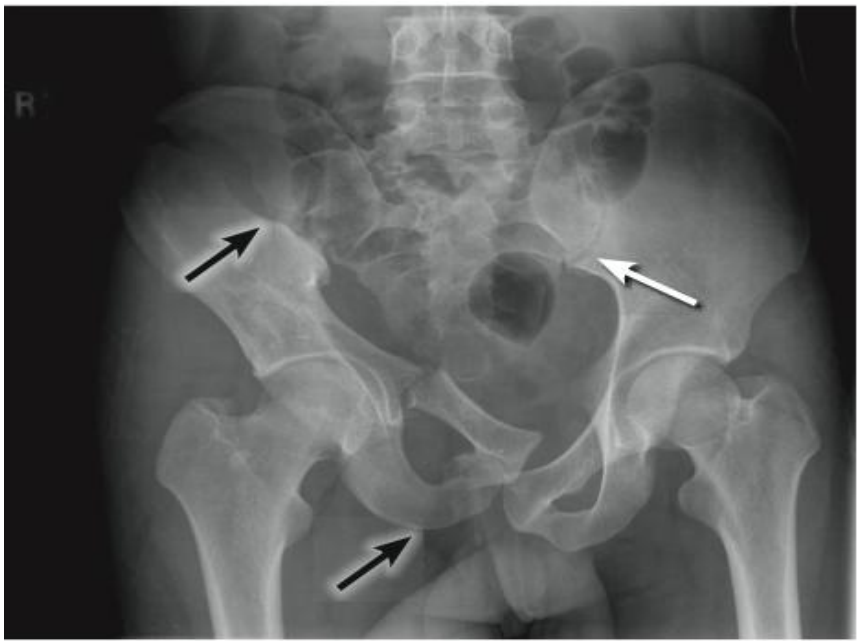
Sodium	134 mEq/L
Potassium	2.6 mEq/L
Calcium	2.5 mEq/L
Magnesium	1.5 mEq/L
Chloride	104 mEq/L
Sodium Acetate	36.6 mEq/L
Anhydrous dextrose	2 g/L

Critical questions

1. What is Hemodialysis?
2. Following eight to ten hours of hemodialysis, do you think the following blood values would be increased, decreased, or remain the same?
   - Serum sodium
   - Serum potassium
   - Serum chloride:
   - Serum creatinine
3. Why does anemia usually develop with maintenance dialysis?
4. Why is hemodialysis required every two to three days for eight to ten hours/day for individuals with complete renal failure? (Flow rate of blood through the dialyzer is 150-300 mL/min.)
5. Differentiate between hemodialysis and peritoneal dialysis

9.4 Case 04: Bladder outlet obstruction

A 28-year-old male was hit by a car while crossing the road. He sustained abrasions to the face, hands, and bruising over both iliac crests. Blood pressure is 90/55 mmHg and pulse is 110/min. Two large bore IVs are inserted and he was given 1L of Lactated Ringer's, and 2L of crossmatched pRBCs. Scrotal and perineal ecchymosis and swelling, blood at the urethral meatus, and bladder distension up to the umbilicus are present. AP radiographs of the pelvis reveal pelvic fracture (bilateral pubic rami fracture). Retrograde cystourethrogram shows a torn posterior urethra; a suprapubic catheter and a pelvic binder are applied.



Critical questions

1. What are the different parts of the urethra?
2. What kind of pelvic fractures lead to urethral injury?
3. What are the indications of urethral catheterization?
4. What is primary and secondary survey?

9.5 Case 05: Infertility

Mr. Afzal 32-year-old man presented with a history of painful mass in left groin.

History of Present Illness:

Patient was alright when he noticed a lump in his left groin two weeks back. It was firm and mobile and a bit painful to touch. He is married and issueless for the last five years.

Past Medical History:

No history of any major illness in the past

Allergies:

The patient denies any significant drug or environmental allergies.

Personal Health:

He does not follow any particular diet.

Sleep patterns: sleeps approximately eight hours nightly.

Family Medical History:

No history of any major illness in the family

Social History and Lifestyle:

He is a chain smoker.

Review of Systems

Cardiovascular: Normal

Respiratory: The patient denies any history of pain, wheezing, chronic cough, hemoptysis, fever, or night sweats.

Gastrointestinal: Normal

Genital/Reproductive: Swelling in the left groin

Urinary: Normal
Musculoskeletal: Normal
CNS: Normal
Psych: Patient feels a little bit depressed

General physical examination

Temp: 37 °C, Pulse: 72 bpm, normal peripheral pulses, Respiration: 18 pm, BP: 110/70 mmHg
General Appearance: 32 year, oriented to person, place and time, bit anxious.
Neck: Thyroid not palpable, trachea central,
CVS: No jugular venous distension, no carotid bruit, no murmurs on auscultation; normal S1 and S2; but tachycardia with regular rhythm.
Respiratory system: Normal shape chest, equal movements bilaterally, with vesicular breathing, no added sound
Abdomen: flat; non-tender to palpation; no masses; no hepatosplenomegaly, bowel sound present
CNS No neurological deficit found
Genitourinary system: Firm, mobile and mildly tender swelling in left inguinal region with empty scrotal sacs.

Investigations:

Blood complete picture: Normal
Urine R/E: Normal
Chest X-ray: Normal
Ultrasound: heterogenous testicles(Right in the abdominal cavity and left in the inguinal canal
Doppler scan: No blood flow seen in the left testis

Critical questions

1. What are the possible causes of infertility?
2. What role reproductive hormones play in secondary sexual characteristics?
3. What lab tests will you request for an infertile couple? What additional studies might be appropriate.
4. Illustrate a flow chart to evaluate infertility?
5. What is positive and negative feedback control for reproductive hormones?
6. What role hypothalamic hypophyseal portal system has to play in secretion of reproductive hormone?
7. What imaging modalities can be used in an infertile couple?
8. How will you counsel an infertile couple?

9.6 Case 06: Nipple Discharge

Mariam, a 32-year lady presented with history of lump in the right breast with nipple discharge of 2 months duration.

History of Present Illness:

The patient was all right 2 months back when she developed discharge from right nipple. The discharge was watery in consistency most of the time. Occasionally there was tinge of blood in it. Now for the last two weeks she noticed a hard lump in the upper outer quadrant of right breast.

Past Medical History:

She gave history of early menarche at 10 yrs of age.

Allergies:

The patient denies any significant drug or environmental allergies.

Personal Health:
She does not follow any particular diet.
Sleep patterns: The woman sleeps approximately eight hours nightly.
Family Medical History:
No history of any major illness in the family
Social History and Lifestyle:
She is an active lady and her 7yrs old son was never breastfed.
Review of Systems
Cardiovascular: Normal
Respiratory: The patient denies any history of pain, wheezing, chronic cough, hemoptysis, fever, or night sweats.
Gastrointestinal: Normal
Urinary: Normal
Musculoskeletal: Normal
CNS: Normal
Psych: Patient feels a little bit depressed
Reproductive system: pain in the breast

General physical examination
Temperature: 99.6F
Pulse: 72 bpm with normal peripheral pulses
Respiration: 18 pm
Blood Pressure: 110/70 mmHg
General Appearance: 32 year old woman, oriented to person, place and time, bit anxious.
Neck: Thyroid not palpable, trachea central
Breast examination: nipple discharge and tenderness around the areola. A 2x2cm hard, non tender mass sticks to underlying structures. There were few palpable axillary lymph nodes as well.
CVS: No jugular venous distention, no carotid bruit, no murmurs on auscultation; normal S1 and S2; but tachycardia with regular rhythm.
Respiratory system: Normal shape chest, equal movements bilaterally, with vesicular breathing, no added sound
GIT: non-tender to palpation; no masses; no hepatosplenomegaly, bowel sound present
CNS: No neurological deficit found
Investigations:
Labs:
Biochemical profile: normal
Blood complete picture: Normal
Urine R/E: Normal
Radiology:
Chest X-ray: Normal
Special Investigations:
FNAC breast:
FNA of the breast lump was done. Smears were made, fixed and stained. Nipple discharge showed clumps of ductal epithelial cells arranged in papillary fronds. These cells had pale and scanty cytoplasm, round nuclei, dark with finely granular cytoplasm. The cells showed no cytological atypia. Several naked bipolar nuclei were seen at the margin of the cell clusters. Background showed RBCs and foamy macrophages. Aspirate from the lump was moderately cellular comprised of numerous

papillary fragments of regular appearing ductal epithelial cells with connective tissue cores. Few apocrine cells and bare nuclei were also seen.

Mammogram: Scattered satellite lesions in right breast.

Critical questions

1. Describe the role of prolactin in pregnant woman
2. What are risk factors to develop breast carcinoma?
3. What lab tests will you request for this patient? What additional studies might be appropriate?
4. Signify the role of FNAC in diagnosis of breast carcinoma
5. What is positive and negative feedback control for prolactin?
6. What role hypothalamic hypophyseal portal system has to play in secretion of prolactin?
7. What imaging modalities can be used in patient of Ca breast?
8. What is breast cancer screening?
9. What is triple assessment for breast pathologies?

1. LIST OF PBLs

1.1. PBL 01: Puffiness & Edema

04 years old was brought in Pediatric Nephrology OPD with puffiness of face, swelling of eye lids and feet for seven days.

On examination, she had swelling around eyes and both feet. On pressing the swelling over feet with thumb produce a dimple.

Her 'Urine Routine Examination' (URE) showed 3+ protein in specimen.

1.2. PBL 02: Renal Pain & Ureteric Colic

20 years old presented in Accident and Emergency (A&E) department of SKBZ Hospital complaining of severe left lumber pain radiating to left lower abdomen.

On physical examination, there was tenderness in left lumber region. Left renal punch was also positive.

Urine Routine Examination (URE) showed many Red blood cells (Rbcs) and Calcium Oxalate crystals, Ultrasonography Scan (USG) revealed mild hydronephrosis of left kidney and an 8mm calculus in upper part of the ureter about 4 centimeter distal to left Pelvi-Ureteric Junction (PUJ). X-Ray showed a radio opaque shadow in line of the left ureter.

1.3. PBL 03: Renal Failure

A 40 yrs old woman came to AIMS hospital complaining of insomnia, anorexia, shortness of breath and swelling of both feet. She was a known hypertensive on irregular treatment for last ten years.

On physical examination, she was pale with pitting ankle edema and bilateral crepts in lower lungs field.

Her Blood Urea and Creatinine were markedly raised.

1.4. PBL 04: Bladder Outlet Obstruction (BOO) & Hematuria/Dysuria .

A 65 years old man reported in Urology OPD of the AIMS Hospital complaining of poor stream, frequency, Urgency, Nocturia and Hematuria.

His physical examination revealed visible and palpable Urinary bladder even after voiding, rectal examination showed moderately enlarged prostate.

URE showed numerous Puss cells and Rbcs. USG showed moderately enlarged prostate, mild Hydronephrosis Hydroureter (bilateral) and 180 mili liters of post void residual urine volume.

1.5. PBL 05: Infertility

32 years old lady married for 10 year presented in OPD of SKBZ hospital with presenting complain of inability to conceive for last 10 year, on inquiring history she lived with her husband and it was couple's first marriage with no coital problem. Her husband is shopkeeper,

Regarding detail history of female she had regular cycle with no dysmenorrhea, dyspareunia and intermenstral spotting. There is history of wt. loss, wt. gain, heat or cold intolerance, no h/o excessive hair growth. No h/o nipple discharge and T.B. in her r family. She took multiple courses of clomiphin citrate for ovulation induction but to conceive.

On examination normal height wt and well oriented lady with normal vital signs. Thyroid was not enlarged and there was no lump in breasts.

On speculum examination vulva, vagina, and cervix healthy looking

On bimanual examination uterus was of normal size with no adenexal mass.

Her INVESTIGATION showed normal husband semen analysis, day 21 progesterone is 35 nmole /lit, 12 day scan showed 18mm size mature follicle, hysterosalpingography and laparoscopy revealed normal tubal patency.

She is diagnosed as a case of unexplained infertility and you advise her to seek for assisted reproductive techniques

REFERENCE BOOKS

1. Guyton 12th Edition.
2. Sherwood 7th Edition.
3. Review of Medical Physiology, Ganong latest edition.
4. Clinical Anatomy by Snell.
5. Last's Anatomy by RJ Last.
6. Clinically Oriented Anatomy by Keith. L. Moore.
7. The Developing Human by Moore & Persau.
8. Basic Histology by Luiz Carlos Junqueira.
9. DiFiore's Atlas of Histology 11th Edition.
10. Lippincot's Biochemistry review 5th edition.
11. Harper's Biochemistry 28th Edition.
12. Mark's Biochemistry 3rd Edition.
13. Macleod's Clinical Examination
14. http://www.nlm.nih.gov/medlineplus/mplusdictionary.html
15. http://www.online-medical-dictionary.org
16. http://www.medterms.com

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AJK Medical College, Muzaffarabad

Schedule for Renal & Reproduction Module – (1st Year)

Week-1

	Puffiness & Edema				
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
8 – 10 AM	**LGIS** Introduction to Module and Team **Dr. Mohsin Shakil** **SGD** Topographic Anatomy of Kidney **Team -01**	**DISSECTION** Topographic Anatomy of Renal System **Dr. Asad & Team 1**	**DISSECTION** Topographic Anatomy of Kidney **Dr. Asad & Team 1**	**SGD** Secretion & reabsorption of Macromolecules Transport across renal tubules **Team-2** **Wrap-up** **Dr. Fauzia**	**SGD** Reabsorption & secretion of Macromolecules: Biochemical perspective Reabsorption and secretion at Nephron **Team 2** **Wrap Up** **Dr. Ayub**
	Tea Break (10:00 – 10:30 AM)				
10.30– 12:30	**Wrap-up** Topographic Anatomy of Kidney **Dr. Asad** **LGIS** Classification of Protein & Albumin **Dr. Zahid Azeem**	**LGIS** Measurement of GFR & factors affecting GFR **Prof. M. Ayub**	**LGIS** Renal Blood Flow measurement **Dr. M. Ayub** **SGD** Obligatory urine volume & formation of concentrated & dilute urine **Team-2** **Wrap-up** **Dr. Fauzia**	**LGIS** Development of urinary bladder, ureter & Kidney **Dr. Asad** **LGIS** Counter Current Mechanism **Dr. Ayub**	**LGIS** Amino acid Pool & degradation **Dr. Zahid Azeem** **SGD** Role of kidney in regulation of body fluid compartment. Renin Angiotensin system **Team 02** **Wrap-up** **Dr. Fauzia**
12:30-1:30	**LGIS** An introduction to Functions of Kidney **Dr. Ijaz Anwar**	**LGIS** Factors affecting Renal Blood Flow **Dr. Fauzia**		**PBL – 1A** **(Team-2)**	
	Lunch & Prayer Break (1:30 – 2:00 PM)				
2:00 – 4:00 PM	**Practical** A:Anatomy: (1-35) B: Biochem: (36-72) C: Physio: (73:105)	**Practical** A:Anatomy: (36-72) B: Biochem: (73:105) C: Physio: (1-35)	**Practical** A:Anatomy: (73:105) B: Biochem: (1-35) C: Physio: (36-72)	**Presentation Seminar**	**SDL**

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Schedule for Renal & Reproduction Module – (1st Year)

Week-2

	Puffiness & Edema			**Renal Pain & Ureteric Colic**	
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
8 – 10 AM	**SKILL LAB** History & clinical Examination of Kidney Patient Revisiting General Physical, abdominal & Lungs examination **Dr. Javed** **Dr. Khalid** **Dr. Manuzza**	**DISSECTION** Ureter **Dr. Sarmad & Team 1**	**PBL-2A** **Prof. Ghuncha & Team-1**	**DISSECTION** Kidney & Ureter **Dr. Sarmad & Team 1**	**SGD** Imaging for investigating Urinary Systems **Team-1** **Wrap-up** **Dr. Shoukat**
	Tea Break (10:00 – 10:30 AM)				
10.30– 12:30	**LGIS** Homeostatic functions of the kidney **Prof. Ayub**	**LGIS** Acid Base Balance-II **Prof. Ayub**	**LGIS** Countercurrent mechanism **Prof. Ayub**	**LGIS** Urea cycle and its regulations **Dr. Zahid Azeem**	**SKILL LAB** History & Clinical examination of urinary stone patient. Revisiting abdominal Examination **Dr. Mohsin,** **Dr. Sarmad,**
10.30– 12:30	**LGIS** Acid Base Balance-I **Prof. Ayub**	**PBL-1B** **Dr. Sarmad & Team-1**	**LGIS** Calcium, Phosphate metabolism **Dr. Zahid Azeem**		
12:30-1:30	**LGIS** Physiological Basis of Intra and extra cellular edema Defenses of Tonicity. **Dr. Fouzia**		**LGIS** Symptoms & Signs of Kidney Diseases **Dr. Imtiaz**	**LGIS** Renal Stones, Types, pathogenesis. **(Prof. Sarosh)**	**LGIS** An overview of Clinical Features of a painful urinary stone **Dr. Mohsin**
	Lunch & Prayer Break (1:30 – 2:00 PM)				
2:00 – 4:00 PM	**Practical** A:Anatomy B: Biochemistry C: Physiology	**Practical** A:Anatomy B: Biochemistry C: Physiology	**Practical** A:Anatomy B: Biochemistry C: Physiology	**SGD** Uric acid Metabolism **Team-2** **Wrap-up** **Dr. Zahid**	**SDL**

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Schedule for Renal & Reproduction Module – (1st Year)

Week-3

	Renal Pain & Ureteric Colic		Oliguria & End Stage Kidney Disease		
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
8 – 10 AM	**Formative Assessment**	**PBL–3A** **(Dr. Fauzia & Team 2)**	**SGD** Pressure Natriuresis & Pressure Diuresis **(Team 2)** **WRAP UP** **Prof. M. Ayub**	**SGD** Osmoreceptors **(Team 2)** **WRAP UP** **(Prof Ayub)**	**LGIS** CRF **Dr Rubina Rafique**
	Tea Break (10:00 – 10:30 AM)				
10.30– 12:30	**LGIS** Micturation reflex **Dr. Ijaz Anwar**	**LGIS** Acid secretion and its regulation **Prof. Ayub**	**LGIS** Cat-ions Sodium & Potassium metabolism **(Dr. Zahid)**	**LGIS** Ethics of transplantation, Terminal care & End of Life issues **Dr. Ayesha Mumtaz**	**Visit to dialysis Center, Family Planning Centre and Blood Bank AIMS** To study Renal Replacement Therapy 1-50 …… grouped in group of 10 for 20 minute monitoring of patient on dialysis
	PBL- 2B **Dr. Ghuncha & Team 1**				
12:30-1:30		**LGIS** Urinary Buffer **Dr Zahid Azeem**	**SDL**	**SDL**	
	Lunch & Prayer Break (1:30 – 2:00 PM)				
2:00 – 4:00 PM	**Feedback Assessment**	**SGD** Diabetes Inspidus **(Team 2)** **WRAP UP** **(Dr. Fozia)**	**LGIS** Counseling skills **Dr. Ayesha Mumtaz**	**SGD** An-ions Acid secretion and Urinary buffers **Team-2** **Wrap-up** **Dr. Alam Khan**	**SDL**
	SDL				

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Schedule for Renal & Reproduction Module – 1st Year MBBS

Week-4

	Oliguria & End Stage Kidney Disease		Dysuria & Urinary Retention		
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
8 – 10 AM	**PBL–3B (Dr. Zahid & Team 2)**	**DISSECTION** The Topographic Anatomy of Bladder, Urethra-1 **(team-1)**	**SGD** Cystometrogram **Team-2 Wrap-up Dr. M. Ayub**	**Simple Arabic Language Prof. Anwar ul Haq**	**Islamiyat**
				LGIS Renal Blood Flow **Prof. Ayub**	**Pak Studies**
	Tea Break (10:00 – 10:30 AM)				
10.30– 12:30	**LGIS** Acid Base Imbalance Metabolic acid / alkaloses **Dr. Alam Khan**	**LGIS** The Urogenital Sinus **Prof. Ghunhca**	**LGIS** Lower Urinary Tract Symptoms **Dr. Mohsin Shakil**	**PBL–4B (Dr. Sarmad & Team 1)**	**LGIS** Renal Function Tests **Dr. Zahid Azeem**
			LGIS Acute and chronic Renal Failure **Dr. Mohsin Shakil**		**Dissection Videos Team-1**
12:30 -1:30	**PBL–4A (Dr. Sarmad & Team 1)**	**LGIS** Renal Physiology **Prof. M. Ayub**	**SDL**	**DSL** Autonomic Bladder	
	Lunch & Prayer Break (1:30 – 2:00 PM)				
2:00 – 4:00 PM	**Practical** A:Anatomy: (1-35) B: Biochem: (36-72) C: Physio: (73:105)	**Practical** A:Anatomy: (36-72) B: Biochem: (73:105) C: Physio: (1-35)	**Practical** A:Anatomy: (73:105) B: Biochem: (1-35) C: Physio: (36-72)	**LGIS** Mechanism of Thirst **Dr. Ijaz Anwar**	**DSL** Renal Transplant

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Amended Schedule for Renal & Reproduction Module – (1st Year)

Week-5

	Oliguria & End Stage Kidney Disease		Dysuria & Urinary Retention		
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
8 – 10 AM			**LGIS** Arabic Language & Islamic Studies **By** **Prof. Anwar** (1st & 2nd Year) at Auditorium		**SGD** Cystometrogram **Team-2** **Wrap-up** **Dr. Fauzia**
					LGIS Pakistan Studies **Dr. Zahid Azeem** (1st & 2nd Year) at Auditorium
	Tea Break (10:00 – 10:30 AM)				
10.30– 12:30			**LGIS** Lower Urinary Tract Symptoms **Dr. Mohsin Shakil**		**LGIS** Renal Function Tests **Dr. Zahid Azeem**
			LGIS Acute and chronic Renal Failure **Dr. Mohsin Shakil**		**Dissection Videos** **Team-1**
1.30-3			**SDL**		
	Lunch & Prayer Break (1:30 – 2:00 PM)				
2:00 – 4:00 PM			**Practical** A:Anatomy: (73:105) B: Biochem: (1-35) C: Physio: (36-72)		**DSL** Renal Transplant

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Schedule for Renal & Reproduction Module – 1st Year MBBS

Week-6

Infertility					
Date →					
↓ Time	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
8-10am	**Eid Holiday**	**Eid Holiday**	**Eid Holiday**	**Revision** Kidney, Uterus **Team-1**	**Revision** Bladder & Urethra **Team-2**
10 -10:30	Tea Break				
10:30-11:30 pm 11:30-12:30 pm	**Eid Holiday**	**Eid Holiday**	**Eid Holiday**	**Revision** Counter Current Mechanism **Team-2**	**Revision** Bladder Abnormalities **Team-2**
12:30 to 1:30					
1:30-2:00	Lunch & Prayer Break				
2:00-3:00 pm	**Eid Holiday**	**Eid Holiday**	**Eid Holiday**	**Revision** GFR **Team-2**	**DSL** Acid Base Balance
3:00-4:00 pm					

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Schedule for Renal & Reproduction Module – 1st Year MBBS

Week-7

Infertility					
Date →					
↓ Time	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
8-10am	**SGD** Acid base Balance **Team-1 Wrap-up Prof. Ayub**	**Revision**	**Module Written Assessment**	**IPA- Block-3**	**Feedback**
10 -10:30	Tea Break				
10:30-11:30 pm 11:30-12:30 pm	**Dissection** **Team-1**	**Revision**	**Revision**	**IPA- Block-3**	**Feedback**
12:30 to 1:30					
1:30-2:00	Lunch & Prayer Break				
2:00-3:00 pm	**SGD** Edema **Dr. Ijaz Anwar & Team-2**	**Revision**	**Revision**	**IPA- Block-3**	**DSL**
3:00-4:00 pm					
10 -10:30					
10:30-11:30 pm 11:30-12:30 pm					
12:30 to 1:30					
1:30-2:00					
2:00-3:00 pm					
3:00-4:00 pm					

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Schedule for Renal & Reproduction Module – 1st Year MBBS

Week-8

Nipple Discharge					
Date					
↓ Time	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
8:00-9:00	**LGIS** Clinical Anatomy of Uterus including ligaments & positions **Dr. Shafaq**	**LGIS** Demographic cycle & trends **Dr. Murtaza**	**Practical** Breast Histo-lab 1-50 Patho-lab 51-100 **Team-1**	**LGIS** Clinical Anatomy of Breast **Dr. Adnan Mehraj**	**LGIS** Imaging of Breast/ Mamography **Dr Shaukat Dar**
9:00-10:00	**LGIS** Anatomy of Prostate **Dr. Asad Bilal**	**LGIS** Androgens synthesis transport & regulation **Prof. Alam Khan**	**LGIS** Synthesis, functions and regulation of female reproductive hormones **Dr. Zahid Azeem**	**LGIS** Indicators of maternal & child health care **Dr. Irum Gilani**	
Break 10:00 – 10:15					
10:30-11:30 pm 11:30-12:30 pm	**Practical** Microscopic anatomy of male reproductive system Histo-lab 1-50 Patho-lab 51-100 **Team-1**	**Skill lab** History & Breast Examination (Breast Self-Examination) **Drs. Nosheena, Aleena, Zarnab, Sumaira, Hina, Komal, Amna**	**SGD** Bio synthesis & actions of prolactin **Team-2**	**Practical** Histology of Gonads Histo-lab 1-50 Patho-lab 51-100 **Team-1**	**SGD** Prevention & management of STI & HIV/AIDs **Prof. Ahmed Khan & Team-4**
12:30 to 1:30	**SGD** Pelvic diaphragm **Team-1**	**Practical** Histology of Female genital tract-1 **Team-1**	**Practical** Histology of Female genital tract-2 **Team-1**	**LGIS** Triple assessment of breast & counselling **Prof. Nizamuddin**	**JUMA PRAYERS**
1:30-2:00	Prayer Break				
2:00-4:00	**DSL** Pelvic peritoneum including rectovesical & recto uterine pouches	**DSL** Breast Cancer	**DSL** Contraception in females	**DSL** Contraception in males	**DSL** Intersex

AJKMC Department of Medical Education represented AJK in Prague. It was first ever paper presentation from AJK in any international Medical Education conference

Abstract Number: 16539

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AN INTERNATIONAL ASSOCIATION FOR MEDICAL EDUCATION

Abstract Title: **Renal Module in integrated Curriculum of AJK Medical College: Design, Delivery and Assessment.**

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Abstract:

Background
To address the requirements of modern health care system, Medical education has undergone a paradigm shift from traditional disciplinary teaching to outcome based integrated medical education system. Foreseen the local demands and needs in specific and global change in general, the leadership of Azad Jammu Kashmir Medical College (AJKMC) decided to develop, implement, assess and evaluate an indigenously designed system based integrated modular curriculum at undergraduate level.

Summary of work
Multidisciplinary team of faculty members from relevant disciplines conducted meetings to develop study guide of "Renal Module" by adopting "Six Step Approach" for curriculum development. A thematic 'Core Content' consisting of four themes was approved after thorough deliberation by module team. Learning outcomes were linked to the themes and appropriate instructional strategies and tools of assessment were defined. "Table of Specifications" (TOS) was designed according to clinical significance of the theme. TOS guided the design of instructional schedule and assessment of the 'Renal Module'. Explicit learning outcome in term of knowledge, skill and attitude were assessed through written & integrated practical assessment (IPA)

Summary of results
Module outcome were assessed through a structural written examination, comprising of SAQs & single best MCQs. Whereas clinical skills and attitude outcome were assessed through 17 integrated OSPE stations. Student Result The Renal Module was evaluated by students and faculty through pilot tested structured questioner. Significant number of students showed complete satisfaction on delivery and assessment of module.

Conclusions
Deign, delivery and assessment of integrated curriculum is laborious, demanding and challenging; though possible even in resource constraint environment of public sector medical college

Take-home message
Integrated curriculum is laborious, demanding and challenging; however, possible if there is a strong political will of the leadership.

Keywords:
8. Assessment: OSCE/ OSPE/ OSTE
23. Curriculum: Evaluation of curriculum
24. Curriculum: Integration
27. Curriculum: Outcome/competency-based
36. Education Management: Change
46. Learning outcomes: All
68. Medical education: Undergraduate education
92. Teachers/Trainers: Roles of the teacher

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