INDIAN COLLEGE OF RADIOLOGY AND IMAGING

MASTERS IN CLINICAL RADIOLOGY (MICR)

(MICR by ICRI, Academic wing of IRIA)

How to prepare for MICR part 2B examination?

(Essential Radiology & Long cases Reporting)

This examination has 2 sessions and conducted online at designated centers.

Every candidate will be provided a covid-safe environment as per guidelines, high resolution monitor, keyboard and mouse. Further details will be sent with Hall ticket.

1. This examination tests, the knowledge of candidate with respect to

   a. Clinical Radiology and Imaging
   b. Detection of normal Radiographs, images and variants
   c. Detection, appropriate classification and diagnosis of abnormal Radiographs and images
   d. Detection of emergencies and trauma, appropriate classification and diagnosis
   e. Long cases reporting – creating full reports for the cases given under the following headings – observations, interpretation, diagnosis, differential diagnosis and management.

f. All Radiology subspecialties will be tested and all imaging modalities including nuclear medicine may be included.

g. You are reminded that, during the examination, information concerning patients may become available to you; this information are confidential and should be respected at all times, after the examination.

2. There are two Sessions in this part

a. **Essential Radiology session - 60 minutes (1:00 Hr.) duration and consists of 50 cases (Dicom images) – 50 marks in total.**

- One or two images per case will be displayed in order.
- Each image to be classified as normal or abnormal – if 'normal' is selected, no more entries to be done.
- Minor age-related degenerative changes and anatomical variants should be recorded as 'normal'. Mild vascular ectasia, mild atheromatous calcifications, phleboliths and rotation and positioning related changes, should also be regarded as normal for this session.
- For those cases that you feel that are abnormal - select 'abnormal' and in addition you should also identify (briefly) the abnormality/diagnosis and type in the box which will appear below 'abnormal'
- The abnormality can be fractures / trauma radiographs, emergency diagnosis, other non-emergency but significant diagnosis – the diagnosis to be written in the box provided. Total duration – 60 minutes.
- 1 mark will be awarded to each correct classification as normal; for those classified as abnormal, the diagnosis also should be correct to obtain the full 1 mark; in case of correct classification as abnormal and diagnosis/ findings are not correct, zero mark will be awarded. Half mark may be awarded in case of closer diagnosis.
- Some Radiograph / image may have more than one unrelated but significant finding; both need to be mentioned to obtain full marks.
- **There will be break of 15 minutes after the above session**. Once break is over, you will be requested to be at the same seat and start your exam for next session.

b. **Long cases reporting session**:

- The Reporting Session is of 110 minutes (1:00 Hr. & 50 Minutes) duration.
- 10 cases of Dicom image sets will be there for reporting.
- All cases to be attempted; all are abnormal.
- A brief clinical history and relevant details will be given about the case.

- Each case can have one or many modalities.
- Each image sets need to scrolled using the Dicom viewer to see all details.
- Some cases can be complex and may have 4 or 5 modalities; time management is essential accordingly
- Each case reading is to be typed under the following headings at relevant boxes meant for them.
    - OBSERVATIONS
    - INTERPRETATION
    - DIAGNOSIS
    - DIFFERENTIAL DIAGNOSIS
    - SUGGESTED MANAGEMENT

- Observations: In this box, all observations related to the case to be typed; the observations ideally to be typed starting with a basic modality eg: Radiographs / ultrasound if given, followed by advanced techniques such as CT, MRI or PETCT in that order. No need to repeat the observations once mentioned in one modality again in this other; instead the additional findings or features observed in that modality need to be mentioned. Relevant negative findings should also be there.
- Interpretation: In this box, the candidate has to decide which pathological process that would explain the observed findings; examples - congenital, developmental, infective, inflammatory, hematologic, neoplastic, traumatic, connective tissue / multisystem disease, syndrome / genetic process or other. Sometimes the process need not fall into one of the pathological sieve exactly eg: torsion. In addition if appropriate, candidate should add one or two salient points that supports the interpretation for that case (candidate should NOT repeat the entire observation points here and may be penalized for this). This interpretation should correlate with your diagnosis which is the next step.
- Diagnosis: the most important aspect of this session – the most likely diagnosis of this case.
- Differential diagnosis (DD): not more than 2 or 3 differential diagnosis to be included; each DD should have one or two lines (not more) of discussion as to why these are less likely than the diagnosis.
- Suggested further management: should relate to the diagnosis and not necessarily radiological; communication of emergencies, clinical management, appropriate further tests that will confirm the suggested diagnosis or exclude other DD need to be mentioned, as relevant to the case. Inappropriate or irrelevant suggestions may be penalized.

- **No need to mention the age, sequences, phase of contrast as a routine introduction prior to observations; but need to be mentioned as part of observation if relevant. See sample below. No need to provide measurements – approximation / estimation is acceptable if you want to mention.**

3. Resources for preparation for the exam.

a. ICRI teachings by ICRI, academic wing of IRIA: the world's longest teaching session in Radiology and Imaging at the lowest cost ever.

b. Please register for the teaching sessions: all information available on iria.org.in and link sent in all social media groups.

c. MICR related exam preparation session on Sundays or other days (please see separate flyer for further details)

e. Recommended books include: IRIA text book of clinical Radiology, Sutton, Grainger & Allison, Green book (Danhert's), Chapmen's Radiological differential diagnosis, Specialist text books, Radiopedia, various videos and teaching sessions by IRIA, specialty associations, Education foundations related to Radiology, Scholarly articles at various journals, especially review articles from major journals including IJRI etc.

f. Various websites that helps prepare for FRCR 2B, FRANZR final, American Board exams will also be useful in preparation for MICR exams.

5. Exam preparation courses:

ICRI also conducts exam preparatory courses prior to examination for all those applied or planning to apply for this exam; the process with be part of ICRI teaching session.

6. Sample Questions:

SEE NEXT PAGE.

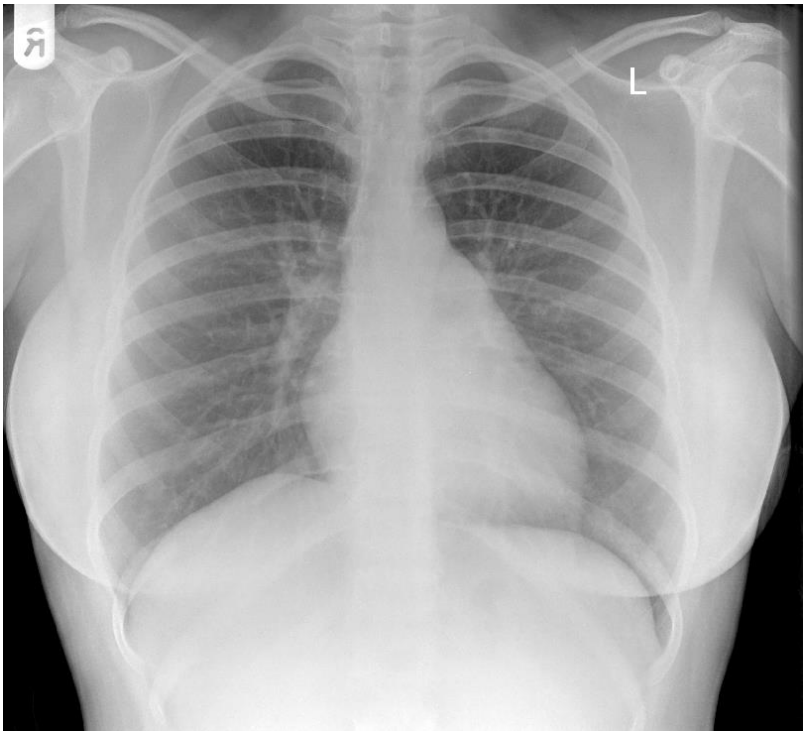
MICR PART 2B: Session 1: Essential Radiology Reporting:

Sample Questions Cases 1-5

Case 1.

Case 2.

Case 3



Case 4

Case 5.

Answers:

Case 1: Torus fracture of distal radius – left.

Case 2: Normal

Case 3: Normal

Case 4: Nodule at right lower lobe; ectasia / aneurysm at descending aorta

Case 5: Hyperdense MCA sign (right); acute infarct at right frontal lobe.

MICR 2B: Session 2 - Long cases reporting: Sample answers

Each case will have a brief clinical history and series of Dicom sets of relevant imaging (images are not here in this document but sample answer below will convey the concept on how to answer this section at relevant boxes)

No need to mention the age, sequences, phase of contrast as introduction to the observations; no need to provide measurements – approximation / estimation is acceptable if you want to mention.

Type the answers in relevant boxes.

Sample answers Cases 1 & 2

Case 1:

Clinical history: 45 year old male presented with severe back pain increasing for the past month with radiation to both lower limbs; he is not a diabetic or hypertensive. He underwent MRI before and after contrast and limited plain CT scan after the MRI. T1, T2, STIR and post contrast MRI images and select CT images are provided.

Case 1:

Observations:

MRI of lumbar spine:

- Abnormal signal lesion noted affecting L4 and L5 vertebral bodies.
- This appears low signal on the T1, heterogeneously high signal on T2 and STIR with prominent but heterogeneous enhancement following contrast.
- L4/5 disc show high signal on T2 with diffuse enhancement following contrast with erosion of inferior endplate of L4.
- Mild reduction of L4 height with slight loss of alignment of L4 over L5.
- Prominent epidural soft tissue noted behind L4 causing cauda equina compression. This tissue show prominent enhancement following contrast but no areas of necrosis.
- Prominent para and pre vertebral soft tissue showing enhancement - some of the soft tissue show rim enhancement and noted within both psoas muscles larger on the right side.

- Rest of the thoracic and cervical vertebral bodies and discs show degenerative changes in the given images. No cord compression.

- Visualised part of abdomen/ pelvis: No significant abdominal or pelvic adenopathy, but small para aortic nodes are seen.

CT scan:

- Plain CT done.

- Destruction / erosion seen affecting part of the L4 and L5 vertebral bodies adjacent to end plates with areas of sclerosis.

- Pre and para vertebral and epidural soft tissue component with few bone fragments.

- Edematous appearance and altered density changes noted at both psoas muscle region.

- Other findings as noted on MRI

Interpretation:

- Disc/end plate and vertebral involvement at L4/5 level– infective process is likely.

Diagnosis:

- Tuberculous spondylodiscitis with para-spinal / epidural inflammatory tissue and bilateral psoas abscess

Differential diagnosis.

- Differential diagnosis osteomyelitis due to other causes such as staphaylococcus and brucellosis.

Suggested management:

Chest radiograph, blood tests related to infection screen, image guided biopsy / aspiration from the disc or paravertebral soft tissue for culture and microscopy and TB related tests.

Case 2:

Clinical history: 52 year old female presented with acute abdominal pain; plain radiograph was obtained and the patient directly went for CECT scan in view of plain Radiograph findings.

Observations:

Plain radiograph of abdomen:

- Plain radiograph show dilated small bowel at the right side of the abdomen.
- There is a dilated loop seen at the upper and mid abdomen with mucosal fold suggestive of haustra
- The distal large bowel and rectum are not obviously distended. No signs of free gas on radiograph
- Left hip screw fixation noted.
- Scoliosis of the lumbar spine concave to the right side.

Contrast enhanced CT of the abdomen and pelvis:

- There is collapse of the rectum, descending colon, transverse colon and part of the ascending colon noted.
- This part of the ascending colon is seen connecting to the dilated loop located at mid to upper abdomen more to the left side, could be rotated cecum.
- There is swirling sign of the vessels noted, in keeping with rotation of the mesentery.
- This large air filled viscus is connecting to the dilated loops of ileum and jejunum which are mainly situated at the right side of the abdomen. No major small bowel wall thickening.
- There is minimal free fluid seen around the liver, no free air seen within the abdomen.
- Post contrast scans show patent major vessels and expected perfusion of small and large bowel loop walls.
- Kidneys show minimal scaring. Contrast uptake present.

- Spleen and pancreas appear normal.
- No significant para aortic adenopathy.
- Stomach is distended with evidence of dilated distal most esophagus.
- The bladder is catheterized.

Interpretation:

Rotation of the large bowel / cecum related mesentery with abnormal location of the proximal ascending colon and caecum.

Diagnosis:

Caecal volvulus

Further management

Immediately alert the duty surgeon / referring doctor as this patient would need surgery.
