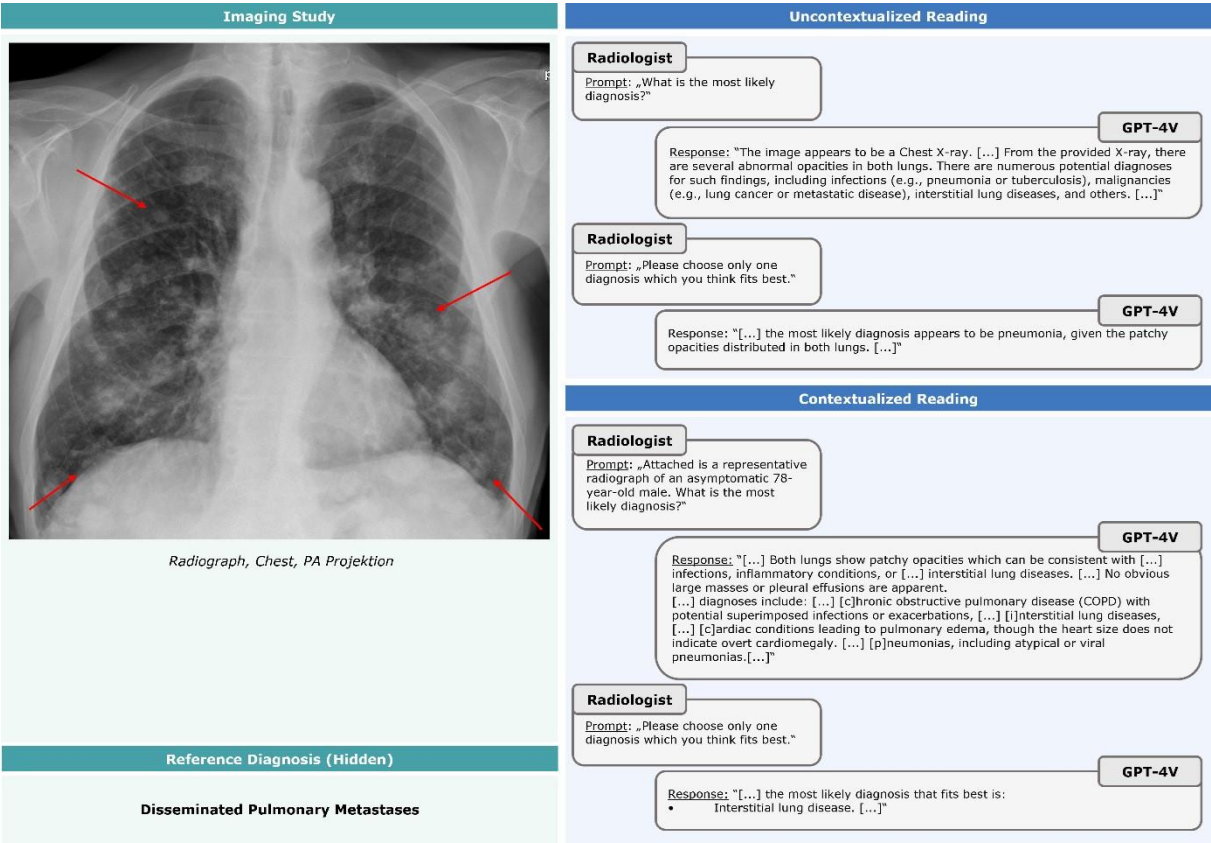


# Supplementary Material

## Supplementary Figures



### **Supplementary Figure 1. An example of implausible diagnostic reasoning.**

Without context, GPT-4V detects patchy opacities and suggests ‘pneumonia’, a diagnosis that aligns well with the described opacities. With context, the tool re-establishes the finding of patchy opacities yet suggests ‘interstitial lung disease’, which is implausible and incorrect when considered against common radiologic knowledge: Bilateral patchy opacities are associated with alveolar consolidation and not a typical sign of interstitial lung disease [29]. Posteroanterior (PA) radiograph of the chest. Asymptomatic 78-year-old male patient with disseminated pulmonary metastases that manifest as disseminated noduli (red arrows). Image organization as in **Figure 4**.

## Supplementary Tables

### Supplementary Table 1: Radiography - Demographic and Clinical Context Information and Reference Diagnoses.

The patient's age and sex, reference diagnosis, chief complaint, and projection of the included radiograph are given.

| N<br>o | Age | Sex | Reference Diagnosis                                    | Chief Complaint                                                                 | Projection of<br>Radiograph |
|--------|-----|-----|--------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------|
| 1      | 13  | m   | non-ossifying fibroma                                  | asymptomatic                                                                    | tibia/fibula lateral        |
| 2      | 10  | f   | osteofibrous dysplasia                                 | asymptomatic                                                                    | tibia/fibula lateral        |
| 3      | 35  | f   | osteochondroma                                         | knee pain                                                                       | knee lateral                |
| 4      | 24  | m   | giant cell tumor                                       | hip pain (right)                                                                | pelvis AP                   |
| 5      | 54  | m   | atelectasis of the middle lobe                         | dyspnea after coronary artery bypass graft surgery                              | chest PA                    |
| 6      | 31  | f   | enchondroma                                            | asymptomatic                                                                    | tibia/fibula AP             |
| 7      | 76  | f   | pleural effusion (left > right)                        | dyspnea after mitral valve reconstruction                                       | chest lateral               |
| 8      | 35  | f   | bronchopulmonary pneumonia (left)                      | cough, fever, and dyspnea                                                       | chest PA                    |
| 9      | 68  | m   | bilateral femoroacetabular impingement (type cam)      | bilateral pain in the groin                                                     | pelvis AP                   |
| 10     | 81  | f   | pericardial calcification                              | cardial decompensation and dyspnea                                              | chest PA                    |
| 11     | 76  | m   | pneumothorax (left)                                    | dyspnea (after CT-guided biopsy of lung tumor [adeno carcinoma])                | chest PA                    |
| 12     | 72  | f   | lung emphysema (chronic obstructive pulmonary disease) | dyspnea                                                                         | chest AP                    |
| 13     | 31  | m   | normal                                                 | chest pain                                                                      | chest PA                    |
| 14     | 31  | m   | normal                                                 | chest pain                                                                      | chest lateral               |
| 15     | 73  | m   | lung cancer (right)                                    | asymptomatic (following implantation of implantable cardioverter-defibrillator) | chest PA                    |
| 16     | 62  | m   | cardiomegaly                                           | asymptomatic                                                                    | chest PA                    |
| 17     | 78  | m   | disseminated pulmonary metastases                      | asymptomatic                                                                    | chest PA                    |

|    |    |   |                                                                                                                                       |                                                               |                    |
|----|----|---|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------|
| 18 | 68 | m | diffuse osteoblastic metastases (prostate carcinoma)                                                                                  | asymptomatic                                                  | chest PA           |
| 19 | 62 | f | Pancoast tumor (right)                                                                                                                | fever and cough                                               | chest PA           |
| 20 | 76 | m | free intraabdominal air (perforation of the right colon)                                                                              | asymptomatic (following coronary artery bypass graft surgery) | chest PA           |
| 21 | 56 | m | sarcoidosis stage IV                                                                                                                  | persistent cough                                              | chest PA           |
| 22 | 13 | f | tuberculosis with pulmonary cavitations                                                                                               | fever and cough                                               | chest PA           |
| 23 | 44 | m | azygos lobe                                                                                                                           | asymptomatic                                                  | chest PA           |
| 24 | 10 | m | proximal radioulnar synostosis                                                                                                        | asymptomatic                                                  | forearm lateral    |
| 25 | 65 | f | fracture of the ventral and dorsal pelvic ring (right)                                                                                | pain in the right groin after trauma                          | pelvis AP          |
| 26 | 11 | f | displaced fracture of the clavicle (right)                                                                                            | shoulder pain after trauma                                    | clavicle AP        |
| 27 | 27 | m | acromioclavicular joint dislocation (Rockwood III; left)                                                                              | shoulder pain after trauma                                    | clavicle AP        |
| 28 | 79 | m | fracture of the 10th rib (right)                                                                                                      | thoracic pain after fall                                      | bony hemithorax AP |
| 29 | 53 | f | large os acromiale                                                                                                                    | restricted shoulder range of motion since birth               | shoulder AP        |
| 30 | 10 | f | hemivertebra of Th 12 and right-convex scoliosis                                                                                      | asymptomatic                                                  | spine AP           |
| 31 | 12 | f | bilateral slipped capital femoral epiphysis                                                                                           | hip instability and pain walking                              | pelvis AP          |
| 32 | 12 | f | status post bilateral fixation with suspected intraarticular position of left screw tip (following slipped capital femoral epiphysis) | post-operative follow-up imaging                              | pelvis AP          |
| 33 | 19 | m | knee joint effusion (due to ACL tear)                                                                                                 | pain after hyperextension trauma                              | knee lateral       |
| 34 | 38 | m | bilateral avascular necrosis of the hip                                                                                               | bilateral hip pain                                            | pelvis AP          |
| 35 | 42 | f | non-displaced lateral femoral neck fracture right ("stress fracture")                                                                 | pain after strenuous exercise                                 | pelvis AP          |
| 36 | 62 | m | impacted medial femoral neck fracture with dorsocaudal tilt (right)                                                                   | pain after fall                                               | pelvis AP          |
| 37 | 16 | f | non-displaced distal radius extension fracture                                                                                        | pain after fall                                               | wrist AP           |
| 38 | 73 | m | scapholunate advanced collapse wrist                                                                                                  | pain and swelling of the wrist without trauma                 | wrist AP           |
| 39 | 22 | m | sub-capital fracture of the distal fifth metacarpal bone                                                                              | swelling after trauma                                         | hand AP            |
| 40 | 55 | m | Hallux rigidus (osteoarthritis)                                                                                                       | local pain (first metatarsophalangeal joint)                  | foot AP            |
| 41 | 0  | m | duodenal atresia                                                                                                                      | non-bilious vomiting after birth                              | abdomen AP         |
| 42 | 30 | m | lobar pneumonia (middle lobe)                                                                                                         | fever and cough                                               | chest PA           |
| 43 | 58 | m | shoulder dislocation (anteroinferior)                                                                                                 | shoulder pain                                                 | shoulder AP        |
| 44 | 10 | f | metacarpal fracture                                                                                                                   | hand pain after fall                                          | hand AP            |

|    |    |   |                                            |                                                                           |                                     |
|----|----|---|--------------------------------------------|---------------------------------------------------------------------------|-------------------------------------|
| 45 | 26 | m | tension pneumothorax (left)                | sudden-onset dyspnea                                                      | chest PA                            |
| 46 | 74 | f | ileus                                      | sudden-onset abdominal pain, distension, and vomiting                     | abdomen AP - left lateral decubitus |
| 47 | 4  | m | torus fracture (lower leg)                 | pain after trauma                                                         | tibia/fibula AP                     |
| 48 | 42 | m | rugger jersey spine                        | recurrent bone fractures, adominal pain, and fatigue                      | chest lateral                       |
| 49 | 54 | f | normal                                     | pain in the wrist after trauma (clinical suspicion for scaphoid fracture) | wrist AP                            |
| 50 | 30 | m | normal                                     | knee pain after trauma                                                    | knee AP                             |
| 51 | 13 | m | normal                                     | pain in the elbow after trauma                                            | elbow lateral                       |
| 52 | 38 | m | normal                                     | asymptomatic                                                              | ankle AP                            |
| 53 | 61 | m | normal                                     | asymptomatic                                                              | shoulder AP                         |
| 54 | 40 | m | normal                                     | asymptomatic                                                              | first digit AP                      |
| 55 | 29 | m | normal                                     | pain in the cervical spine after trauma                                   | cervical spine AP                   |
| 56 | 49 | f | normal                                     | pain in the finger after trauma                                           | finger lateral                      |
| 57 | 46 | m | normal                                     | pain in the lumbar spine after trauma                                     | lumbal spine AP                     |
| 58 | 21 | m | normal                                     | asymptomatic                                                              | pelvis AP                           |
| 59 | 68 | f | triquetral fracture (chip fracture)        | hand pain after trauma                                                    | hand lateral                        |
| 60 | 26 | m | osteochondritis dissecans of lateral talus | ankle pain                                                                | ankle AP                            |

## Supplementary Table 2: Computed Tomography - Demographic and Clinical Context Information and Reference Diagnoses.

The patient's age and sex, reference diagnosis, chief complaint, contrast phase, examined anatomic region, and reconstruction (slice) are given.

| N o. | A g e | S e x | Reference Diagnosis                      | Chief Complaint                                              | (Contrast) Phase                        | Anatomic Region | Reconstruction |
|------|-------|-------|------------------------------------------|--------------------------------------------------------------|-----------------------------------------|-----------------|----------------|
| 1    | 35    | m     | sarcoidosis                              | chronic dry cough and fatigue                                | unenhanced                              | lung            | coronal        |
| 2    | 81    | f     | pancreatitis                             | upper abdominal pain                                         | venous                                  | abdomen         | axial          |
| 3    | 57    | m     | emphysematous cystitis                   | lower abdominal pain                                         | venous                                  | abdomen         | axial          |
| 4    | 58    | m     | cervical abscess                         | pain, hyperthermia, and swelling of the neck                 | venous                                  | neck            | axial          |
| 5    | 64    | f     | liver cirrhosis with portal hypertension | chronic abdominal pain, history of gastrointestinal bleeding | venous                                  | abdomen         | axial          |
| 6    | 18    | m     | sigmoid volvulus                         | acute abdominal pain, distension, and vomiting               | venous                                  | abdomen         | coronal        |
| 7    | 66    | f     | bilateral pulmonary embolism             | acute dyspnea and tachycardia                                | arterial (maximum intensity projection) | chest           | coronal        |
| 8    | 69    | f     | osteolysis C5 (+ artifacts)              | multiple myeloma                                             | unenhanced                              | neck            | sagittal       |
| 9    | 60    | m     | normal                                   | nose pain after a punch to the face                          | unenhanced                              | head            | axial          |
| 10   | 36    | f     | normal                                   | coughing, dyspnea, and dysphagia                             | unenhanced                              | lung            | axial          |
| 11   | 20    | m     | normal                                   | neck pain after trauma                                       | unenhanced                              | cervical spine  | coronal        |
| 12   | 79    | m     | normal                                   | dyspnea                                                      | arterial                                | chest           | axial          |
| 13   | 28    | m     | normal                                   | asymptomatic                                                 | venous                                  | abdomen         | coronal        |
| 14   | 65    | m     | normal                                   | dyspnea                                                      | unenhanced                              | lung            | coronal        |

|        |        |   |                                                                                                  |                                                     |            |         |          |
|--------|--------|---|--------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------|---------|----------|
| 1<br>5 | 1<br>6 | m | normal                                                                                           | asymptomatic                                        | unenhanced | spine   | sagittal |
| 1<br>6 | 1<br>7 | f | normal                                                                                           | asymptomatic                                        | arterial   | abdomen | coronal  |
| 1<br>7 | 3<br>1 | m | normal                                                                                           | asymptomatic                                        | unenhanced | brain   | axial    |
| 1<br>8 | 3<br>2 | m | normal                                                                                           | asymptomatic                                        | arterial   | chest   | axial    |
| 1<br>9 | 1<br>3 | f | normal                                                                                           | knee pain after trauma                              | unenhanced | knee    | sagittal |
| 2<br>0 | 3<br>0 | f | normal                                                                                           | asymptomatic                                        | unenhanced | wrist   | coronal  |
| 2<br>1 | 4      | m | external otitis (right)                                                                          | pain and hearing loss (right)                       | unenhanced | head    | axial    |
| 2<br>2 | 5<br>7 | f | bimalleolar fracture (with cast)                                                                 | ankle pain (right) after trauma                     | unenhanced | ankle   | coronal  |
| 2<br>3 | 6<br>4 | f | intestinal ischemia with signs of viscus perforation                                             | acute abdomen                                       | venous     | abdomen | axial    |
| 2<br>4 | 2<br>9 | f | kidney rupture after trauma                                                                      | upper abdominal pain after trauma                   | venous     | abdomen | axial    |
| 2<br>5 | 2<br>9 | f | rib fracture and liver laceration                                                                | upper abdominal pain after trauma                   | venous     | abdomen | axial    |
| 2<br>6 | 6<br>8 | m | transposition of right coronary artery to left coronary sinus and malignant interarterial course | acute chest pain                                    | arterial   | chest   | axial    |
| 2<br>7 | 8<br>9 | f | thrombus in left atrium                                                                          | atrial fibrillation                                 | arterial   | chest   | axial    |
| 2<br>8 | 5<br>6 | m | left coronary artery plaque with significant stenosis                                            | angina pectoris                                     | arterial   | chest   | axial    |
| 2<br>9 | 8<br>1 | m | pseudoaneurysm of the superior femoral artery (right)                                            | right inguinal swelling after catheter intervention | arterial   | pelvis  | axial    |
| 3<br>0 | 6<br>2 | f | subdural hematoma                                                                                | after trauma                                        | unenhanced | brain   | axial    |
| 3<br>1 | 6<br>7 | m | intracranial bleeding with midline shift                                                         | acute headache and vomiting                         | unenhanced | brain   | axial    |
| 3<br>2 | 6<br>4 | m | tuberculosis with apical infiltration and cavity                                                 | constitutional symptoms                             | unenhanced | lung    | coronal  |
| 3<br>3 | 1<br>2 | f | scoliosis                                                                                        | asymptomatic                                        | unenhanced | spine   | coronal  |
| 3<br>4 | 4<br>0 | m | bilateral mandibular fractures                                                                   | jaw pain after trauma                               | unenhanced | head    | coronal  |

|        |        |   |                                                                                            |                                                                                                           |            |         |          |
|--------|--------|---|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------|---------|----------|
| 3<br>5 | 5<br>1 | f | hepatic steatosis                                                                          | asymptomatic                                                                                              | venous     | abdomen | axial    |
| 3<br>6 | 7<br>4 | m | distal radius fracture and scaphoid fracture                                               | wrist pain after trauma                                                                                   | unenhanced | wrist   | coronal  |
| 3<br>7 | 6<br>3 | f | thrombophlebitis of the internal jugular vein (left)                                       | swelling and hyperthermia of the left neck                                                                | venous     | neck    | coronal  |
| 3<br>8 | 7<br>4 | f | osteoarthritis of the hip (right)                                                          | hip pain after trauma                                                                                     | unenhanced | pelvis  | coronal  |
| 3<br>9 | 3<br>7 | m | urolithiasis with hydronephrosis II° (left)                                                | flank pain (left)                                                                                         | unenhanced | abdomen | coronal  |
| 4<br>0 | 6<br>1 | m | patella fracture with bloody joint effusion                                                | knee pain after trauma                                                                                    | unenhanced | knee    | sagittal |
| 4<br>1 | 5<br>5 | m | enterocolitis in graft-versus-host disease                                                 | abdominal pain after stem cell transplantation                                                            | venous     | abdomen | axial    |
| 4<br>2 | 7<br>0 | m | Leriche syndrome                                                                           | acute paraparesis with absent pulse                                                                       | arterial   | abdomen | coronal  |
| 4<br>3 | 5<br>9 | m | basilar aneurysm                                                                           | sudden collapse and coma                                                                                  | arterial   | brain   | axial    |
| 4<br>4 | 4<br>8 | m | cerebellar cavernoma                                                                       | recurring depression and suspected cerebellar mass                                                        | unenhanced | brain   | axial    |
| 4<br>5 | 5<br>3 | f | lobar pneumonia                                                                            | dyspnea and signs of systemic infection                                                                   | venous     | lung    | axial    |
| 4<br>6 | 6<br>0 | m | viral pneumonia (COVID-19)                                                                 | progressive dyspnea                                                                                       | unenhanced | lung    | axial    |
| 4<br>7 | 6<br>8 | m | dislocation of pedicular screw                                                             | pain following back stabilization surgery with internal fixation                                          | unenhanced | spine   | axial    |
| 4<br>8 | 3<br>9 | f | thrombosis of the sigmoid sinus (right)                                                    | headache (right side) and emesis                                                                          | venous     | brain   | coronal  |
| 4<br>9 | 8<br>3 | m | arterial bleeding of the hepatic common artery into an abscess after left hemi-hepatectomy | status post left hemi-hepatectomy due to cholangiocellular carcinoma, now acute drop in hemoglobin levels | arterial   | abdomen | coronal  |
| 5<br>0 | 8<br>0 | m | kidney cyst rupture after trauma                                                           | left-sided abdominal pain after fall                                                                      | venous     | abdomen | sagittal |
| 5<br>1 | 6<br>1 | f | gastrointestinal ischemia                                                                  | abdominal pain with peritonism                                                                            | arterial   | abdomen | axial    |
| 5<br>2 | 5<br>3 | m | appendicitis                                                                               | acute abdomen with abdominal focus and infection                                                          | venous     | abdomen | axial    |
| 5<br>3 | 7<br>3 | f | left atrial myxoma                                                                         | sonographic mass in left atrium                                                                           | arterial   | chest   | axial    |
| 5<br>4 | 6<br>8 | m | aspiration of positive oral contrast medium and pneumonia                                  | respiratory distress                                                                                      | venous     | lung    | axial    |

|        |        |   |                                                      |                                                                            |            |            |         |
|--------|--------|---|------------------------------------------------------|----------------------------------------------------------------------------|------------|------------|---------|
| 5<br>5 | 3<br>5 | f | lung cancer of the right upper lobe                  | suspected lung cancer                                                      | venous     | lung       | axial   |
| 5<br>6 | 7<br>4 | f | aneurysm of ascending aorta                          | suspected lung cancer                                                      | venous     | chest      | axial   |
| 5<br>7 | 7<br>1 | f | pseudoaneurysm with cardiac tamponade                | sudden-onset dyspnea and heart failure after coronary catheter angiography | arterial   | whole body | coronal |
| 5<br>8 | 4<br>0 | f | ovarian torsion with incarceration                   | pelvic pain and intrapelvic mass                                           | venous     | abdomen    | axial   |
| 5<br>9 | 5<br>7 | f | cutaneous metastasis of a non-small cell lung cancer | progredient skin tumor and history of non-small cell lung cancer           | venous     | neck       | axial   |
| 6<br>0 | 3<br>9 | f | thrombosis of the right sigmoid sinus                | headache (right) and emesis                                                | unenhanced | brain      | axial   |

### Supplementary Table 3: Magnetic Resonance Imaging - Demographic and Clinical Context Information and Reference Diagnoses.

The patient's age and sex, reference diagnosis, chief complaint, examined anatomic region, sequence weighting, fat saturation, contrast enhancement (phase), and slice orientation are given. Abbreviations: TSE – turbo spin-echo, GRE – gradient-echo, PD – proton density, MRCP - magnetic resonance cholangiopancreatography, IR – inversion recovery, FLAIR - Fluid-Attenuated Inversion Recovery.

| No. | Age | Sex | Reference Diagnosis                                       | Chief Complaint                      | Anatomic Region | Sequence Weighting | Fat Saturation | Contrast Phase | Slice Orientation |
|-----|-----|-----|-----------------------------------------------------------|--------------------------------------|-----------------|--------------------|----------------|----------------|-------------------|
| 1   | 18  | m   | iron overload in sickle cell anemia                       | asymptomatic (sickle cell anemia)    | abdomen         | T2 TSE             | no             | unenhanced     | axial             |
| 2   | 38  | f   | focal nodular hyperplasia of the liver                    | unclear liver mass in ultrasound     | abdomen         | T1 GRE             | yes            | hepatobiliary  | axial             |
| 3   | 24  | f   | Hoffa-fat pad-impingement                                 | knee pain without trauma             | knee            | PD TSE             | yes            | unenhanced     | sagittal          |
| 4   | 65  | m   | primary sclerosing cholangitis (liver)                    | increased markers of cholestasis     | abdomen         | 3D MRCP            | yes            | unenhanced     | coronal           |
| 5   | 58  | m   | vestibular schwannoma                                     | gradual hearing loss (left)          | head            | T1 TSE             | yes            | late venous    | coronal           |
| 6   | 50  | m   | rupture of the quadriceps tendon                          | knee pain and lack of leg extension  | knee            | PD TSE             | yes            | unenhanced     | sagittal          |
| 7   | 15  | f   | anterior displacement of the disc (jaw)                   | locked jaw                           | jaw             | T1 TSE             | no             | unenhanced     | sagittal          |
| 8   | 27  | m   | posterior cruciate ligament rupture                       | knee pain after trauma               | knee            | PD TSE             | yes            | unenhanced     | sagittal          |
| 9   | 18  | m   | normal                                                    | acute pain (lumbar spine) after fall | lumbar spine    | T2 TSE             | no             | unenhanced     | sagittal          |
| 10  | 29  | f   | normal                                                    | systemic mastocytosis                | abdomen         | T2 TSE             | no             | unenhanced     | axial             |
| 11  | 12  | f   | flake fracture                                            | knee pain after trauma               | knee            | PD TSE             | yes            | unenhanced     | axial             |
| 12  | 21  | m   | pericarditis                                              | fatigue                              | heart           | IR                 | yes            | late venous    | 4-chamber view    |
| 13  | 17  | m   | infarction of inferior myocardium (right coronary artery) | acute chest pain                     | heart           | IR                 | yes            | late venous    | short axis view   |

|    |    |   |                                                             |                                                                           |                   |                               |     |                |          |
|----|----|---|-------------------------------------------------------------|---------------------------------------------------------------------------|-------------------|-------------------------------|-----|----------------|----------|
| 14 | 66 | f | ductal carcinoma in situ                                    | mass in the right breast                                                  | breast            | T1 GRE (subtraction)          | no  | early arterial | axial    |
| 15 | 53 | f | normal                                                      | none                                                                      | breast            | T2 TSE                        | no  | unenhanced     | axial    |
| 16 | 26 | m | normal                                                      | locked jaw                                                                | jaw               | PD TSE                        | no  | unenhanced     | sagittal |
| 17 | 12 | f | normal                                                      | plantar pain                                                              | foot              | PD TSE                        | yes | unenhanced     | sagittal |
| 18 | 45 | f | normal                                                      | reduced visual acuity                                                     | brain             | T2 TSE                        | no  | unenhanced     | axial    |
| 19 | 36 | m | normal                                                      | vertigo                                                                   | brain             | FLAIR                         | yes | unenhanced     | axial    |
| 20 | 64 | f | normal                                                      | asymptomatic                                                              | head              | T2 TSE                        | no  | unenhanced     | coronal  |
| 21 | 58 | f | normal                                                      | pulsating tinnitus (left)                                                 | head              | 3D time-of-flight angiography | yes | unenhanced     | coronal  |
| 22 | 58 | f | normal                                                      | pulsating tinnitus (left)                                                 | head              | 3D T2 TSE                     | no  | unenhanced     | axial    |
| 23 | 42 | f | normal                                                      | knee pain after trauma                                                    | knee              | PD TSE                        | yes | unenhanced     | sagittal |
| 24 | 75 | f | trochanteric bursitis (left)                                | chronic hip pain (left)                                                   | pelvis            | PD TSE                        | yes | unenhanced     | axial    |
| 25 | 50 | f | kidney cyst (Bosniak I)                                     | sonographic mass of the kidney                                            | abdomen           | T2 TSE                        | no  | unenhanced     | coronal  |
| 26 | 61 | f | medial disc protrusion                                      | lower back pain                                                           | lumbar spine      | T2 TSE                        | no  | unenhanced     | axial    |
| 27 | 24 | m | hepatomegaly with kissing spleen phenomenon                 | alpha-1-antitrypsin deficiency                                            | abdomen           | T2 TSE                        | no  | unenhanced     | axial    |
| 28 | 73 | f | cervix carcinoma                                            | mass of the cervix                                                        | pelvis            | T2 TSE                        | no  | unenhanced     | sagittal |
| 29 | 52 | f | uterus myomatosus                                           | pelvic pain associated with menstrual period                              | pelvis            | T2 TSE                        | yes | unenhanced     | axial    |
| 30 | 54 | m | primary sclerosing cholangitis and intrahepatic cholestasis | aggravation of inflammatory bowel disease                                 | abdomen           | T2 TSE                        | no  | unenhanced     | axial    |
| 31 | 74 | m | parotid carcinoma                                           | parotid mass                                                              | neck              | T2 TSE                        | yes | unenhanced     | axial    |
| 32 | 31 | f | osteochondroma of the distal femur                          | chronic popliteal pain and mass                                           | knee              | T1 TSE                        | no  | unenhanced     | axial    |
| 33 | 58 | m | lipoatrophic hamstring                                      | muscular pain, elevated markers of muscle damage (creatine phosphokinase) | lower extremities | T1 TSE                        | no  | unenhanced     | axial    |
| 34 | 26 | f | enchondroma of the femur (right)                            | follicular thyroid carcinoma                                              | neck              | T1 TSE                        | yes | late venous    | coronal  |

|    |    |   |                                                   |                                                               |              |                      |     |                |          |
|----|----|---|---------------------------------------------------|---------------------------------------------------------------|--------------|----------------------|-----|----------------|----------|
| 35 | 26 | f | hemangioma of L3                                  | pain in the lower back                                        | lumbar spine | T1 TSE               | no  | unenhanced     | sagittal |
| 36 | 67 | f | invasive lobular breast cancer                    | mass in left breast                                           | breast       | T1 GRE (subtraction) | no  | early arterial | axial    |
| 37 | 59 | f | MRI after microwave ablation (liver)              | hepatic metastasis of sigmoid carcinoma                       | abdomen      | T2 TSE               | no  | unenhanced     | axial    |
| 38 | 28 | m | secondary synovial chondromatosis                 | restricted motion of the left hip and massive pain            | pelvis       | T2 TSE               | no  | unenhanced     | axial    |
| 39 | 71 | f | odontogenic cyst of the maxilla (right)           | cervical swelling                                             | neck         | T1 TSE               | yes | late venous    | coronal  |
| 40 | 57 | f | fibroadenoma of the breast                        | mass in left breast                                           | breast       | T2 TSE               | no  | unenhanced     | axial    |
| 41 | 90 | f | fracture of L2                                    | pain in the lower back after fall                             | lumbar spine | T2 TSE               | yes | unenhanced     | sagittal |
| 42 | 74 | m | bladder diverticulosis                            | asymptomatic                                                  | pelvis       | T2 TSE               | no  | unenhanced     | axial    |
| 43 | 25 | m | osteoid osteoma                                   | chronic pain in right proximal femur                          | thigh        | T1 TSE               | yes | late venous    | axial    |
| 44 | 70 | f | liver cirrhosis and splenomegaly                  | elevated liver enzymes                                        | abdomen      | T2 TSE               | no  | unenhanced     | axial    |
| 45 | 77 | m | side-duct intraductal papillary mucinous neoplasm | asymptomatic                                                  | abdomen      | T2 TSE               | no  | unenhanced     | axial    |
| 46 | 71 | m | prostate cancer (PI-RADS 5, peripheral zone)      | massive elevation of prostate-specific antigen                | prostate     | T2 TSE               | no  | unenhanced     | axial    |
| 47 | 32 | f | teratoma                                          | sonographic ovarian mass right                                | pelvis       | T2 TSE               | yes | unenhanced     | axial    |
| 48 | 30 | f | endometriosis with chocolate cysts                | chronic lower abdominal/pelvic pain                           | pelvis       | T2 TSE               | no  | unenhanced     | coronal  |
| 49 | 17 | f | uterus didelphys                                  | chronic pelvic pain                                           | pelvis       | T2 TSE               | yes | unenhanced     | axial    |
| 50 | 64 | m | exophytic urothelial carcinoma (bladder wall)     | elevation of prostate-specific antigen                        | prostate     | T2 TSE               | no  | unenhanced     | axial    |
| 51 | 26 | m | seminal vesiculitis (left) with prostatitis       | persistent lower abdominal pain after urinary tract infection | pelvis       | T2 TSE               | no  | unenhanced     | coronal  |
| 52 | 29 | m | peripheral nerve sheath tumor                     | popliteal mass                                                | knee         | T2 TSE               | yes | unenhanced     | sag      |
| 53 | 50 | m | Crohn's disease with sigmoid affection            | chronic abdominal pain and inflammation                       | abdomen      | T1 GRE               | yes | late venous    | coronal  |

|    |    |   |                                                       |                                          |         |                              |     |             |          |
|----|----|---|-------------------------------------------------------|------------------------------------------|---------|------------------------------|-----|-------------|----------|
| 54 | 20 | m | coagulation in corpora cavernosa after penile rupture | priapism after sexual trauma             | penis   | T1 TSE                       | no  | unenhanced  | axial    |
| 55 | 43 | m | plantar fibromatosis                                  | plantar pain                             | foot    | T1 TSE                       | yes | late venous | sagittal |
| 56 | 83 | f | empty sella                                           | central hypothyroidism                   | brain   | T1 TSE                       | yes | late venous | coronal  |
| 57 | 68 | m | sialolithiasis of submandibular duct                  | tumor of the left buccal wall            | head    | T2 TSE                       | no  | unenhanced  | axial    |
| 58 | 75 | f | choledocholithiasis                                   | cholangiopathy with recurring infections | abdomen | T2 TSE                       | no  | unenhanced  | coronal  |
| 59 | 60 | m | hemangioma of the thumb                               | tumor of the thumb                       | thumb   | 4D angiography (subtraction) | no  | arterial    | sagittal |
| 60 | 71 | m | massive benign prostate hyperplasia                   | nycturia                                 | pelvis  | T2 TSE                       | no  | unenhanced  | axial    |

**Supplementary Table 4: Angiography - Demographic and Clinical Context Information and Reference Diagnoses.**

The patient's age and sex, reference diagnosis, and chief complaint are given.

| No. | Age | Sex | Reference Diagnosis                                                          | Chief Complaint                                                       |
|-----|-----|-----|------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1   | 74  | m   | tumor blush of hepatocellular carcinoma                                      | cirrhosis and liver mass of unknown origin                            |
| 2   | 74  | m   | pseudoaneurysm of common hepatic artery                                      | upper abdominal pain and drop in hemoglobin levels                    |
| 3   | 69  | m   | bile leakage due to percutaneous transhepatic biliary drainage insufficiency | persisting infection after percutaneous transhepatic biliary drainage |
| 4   | 54  | m   | advanced stenosis of proximal superior femoral artery                        | leg pain during ambulation                                            |
| 5   | 86  | m   | thrombosis of the port catheter tip                                          | dysfunctional port catheter                                           |
| 6   | 75  | f   | active bleeding due to shunt vein rupture                                    | acute pain and swelling in the left arm (shunt vein in left arm)      |
| 7   | 30  | m   | femoral venous thrombosis with postthrombotic changes                        | swelling and pain in the leg                                          |
| 8   | 48  | m   | thrombotic occlusion of transjugular intrahepatic shunt                      | increasing ascites (transjugular intrahepatic portosystemic shunt)    |
| 9   | 83  | m   | normal percutaneous transhepatic biliary drainage without signs of leakage   | persisting infection after percutaneous transhepatic biliary drainage |
| 10  | 74  | m   | normal mesentericography                                                     | liver tumor, presence of aberrant tumor-feeding arteries              |

|    |    |   |                                                                        |                                                                                                       |
|----|----|---|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
|    |    |   | with indirect portography                                              |                                                                                                       |
| 11 | 34 | f | implantable port without signs of dysfunction                          | control after implantation of port-a-cath                                                             |
| 12 | 77 | f | active bleeding of deep femoral artery                                 | sudden pain and swelling of the left groin after extraction of arterial catheter                      |
| 13 | 67 | f | aneurysm of the splenic artery                                         | pain in the upper left abdomen radiating to the shoulder and palpable pulsation in left upper abdomen |
| 14 | 58 | m | stenosis of the superior mesenteric artery                             | intermittent abdominal pain after eating                                                              |
| 15 | 63 | m | thrombosis of the superior mesenteric artery                           | severe abdominal pain, nausea, and vomiting; history of untreated atrial fibrillation                 |
| 16 | 41 | f | primary sclerosing cholangitis                                         | recurrent cholestasis, itching, and upper abdominal pain years after liver transplantation            |
| 17 | 69 | m | subtotal occlusion of the inferior trunk of the middle cerebral artery | sudden onset left-sided hemiparesis and aphasia                                                       |
| 18 | 79 | m | stenosis of dialysis shunt                                             | dialysis shunt dysfunction                                                                            |
| 19 | 66 | m | occlusion of left renal artery                                         | left flank pain and bloody urine                                                                      |
| 20 | 73 | m | dislocation of port catheter                                           | dysfunction of port catheter                                                                          |
| 21 | 76 | f | superior vena cava syndrome                                            | slowly progressive headache and facial swelling; history of extensive non-small cell lung cancer      |
| 22 | 27 | f | arteriovenous malformation in gluteal muscles                          | persistent gluteal pain                                                                               |
| 23 | 67 | m | Budd Chiari syndrome                                                   | right upper quadrant pain, ascites                                                                    |
| 24 | 29 | m | normal angiogram of the leg                                            | leg pain after trauma                                                                                 |
| 25 | 90 | m | endoleak type II                                                       | asymptomatic after endovascular aortic repair                                                         |

|    |    |   |                |                                            |
|----|----|---|----------------|--------------------------------------------|
| 26 | 63 | m | normal T-drain | asymptomatic; recent liver transplantation |
|----|----|---|----------------|--------------------------------------------|

**Supplementary Text S1**

**Power Analysis**

This study’s power analysis was informed by previous studies evaluating the effects of AI assistance on diagnostic performance [30; 31]. Because of differences in study design, methodologic procedures, and sample characteristics, we assumed a moderate effect size of 0.5. Consequently, the minimum sample size was determined as 26 based on a statistical power of 0.8, a probability of type I  $\alpha$  error of 0.05, and a two-tailed procedure (G\*Power, v3.1; Heinrich-Heine-University) [32]. To realize sufficient statistical power per modality, we included 60 radiographs, 60 CT images, 60 MR images, and 26 angiographic images, i.e., 206 images. Fewer angiographic images were included due to our hospital’s substantially smaller volume of angiographic imaging.