

# **AHG22: Sequences with medical mixed content and medical visual content with bit depth beyond 10 bits for HEVC development (m30934/JCTVC-00172)**

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## Sequences overview

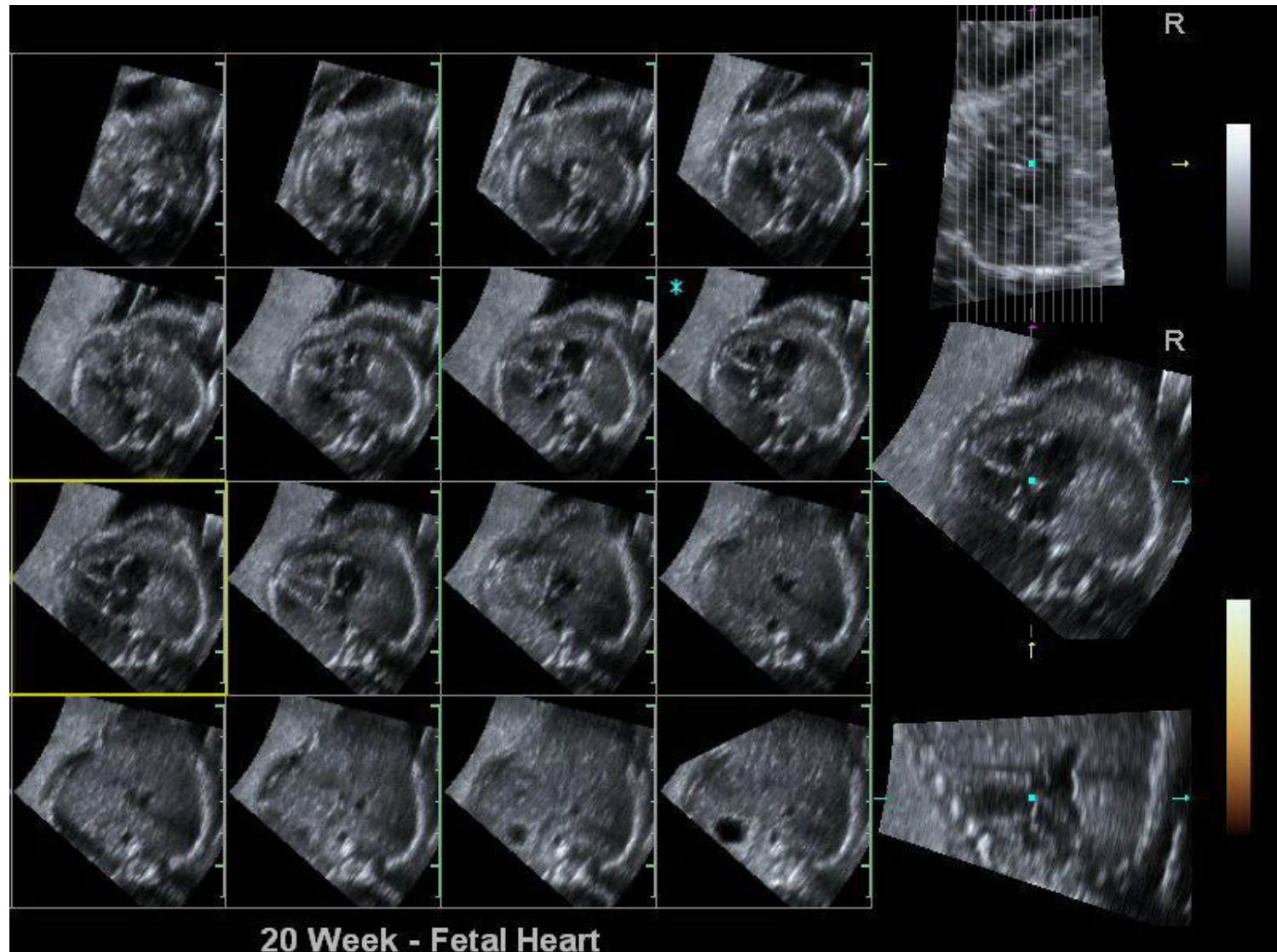
- Ultrasound (US) and related mixed content (ultrasound image data and screen content): 8-bit RGB 2D+t image sequences
  - 3 sequences
- Computed tomography (CT) image data: 12-bit monochrome, continuous-tone 3D image volumes
  - 2 sequences
- Magnetic resonance (MR) image data: 14-bit monochrome, continuous-tone 3D image volumes
  - 3 sequences
- Angiography (AX) image data: 16-bit monochrome, continuous-tone 2D X-ray projections
  - 1 sequence

## 8-bit RGB

- Ultrasound (US) and related mixed content (ultrasound image data and screen content): 8-bit RGB 2D+t image sequences
- Proposed test sequences
  - *US\_19Segments* (800x600 pixels, 30 fps, 90 frames)
  - *US\_Doppler* (800x600 pixels, 12 fps ,12 frames)
  - *US\_FetalHeart* (800x600 pixels, 40 fps, 90 frames)

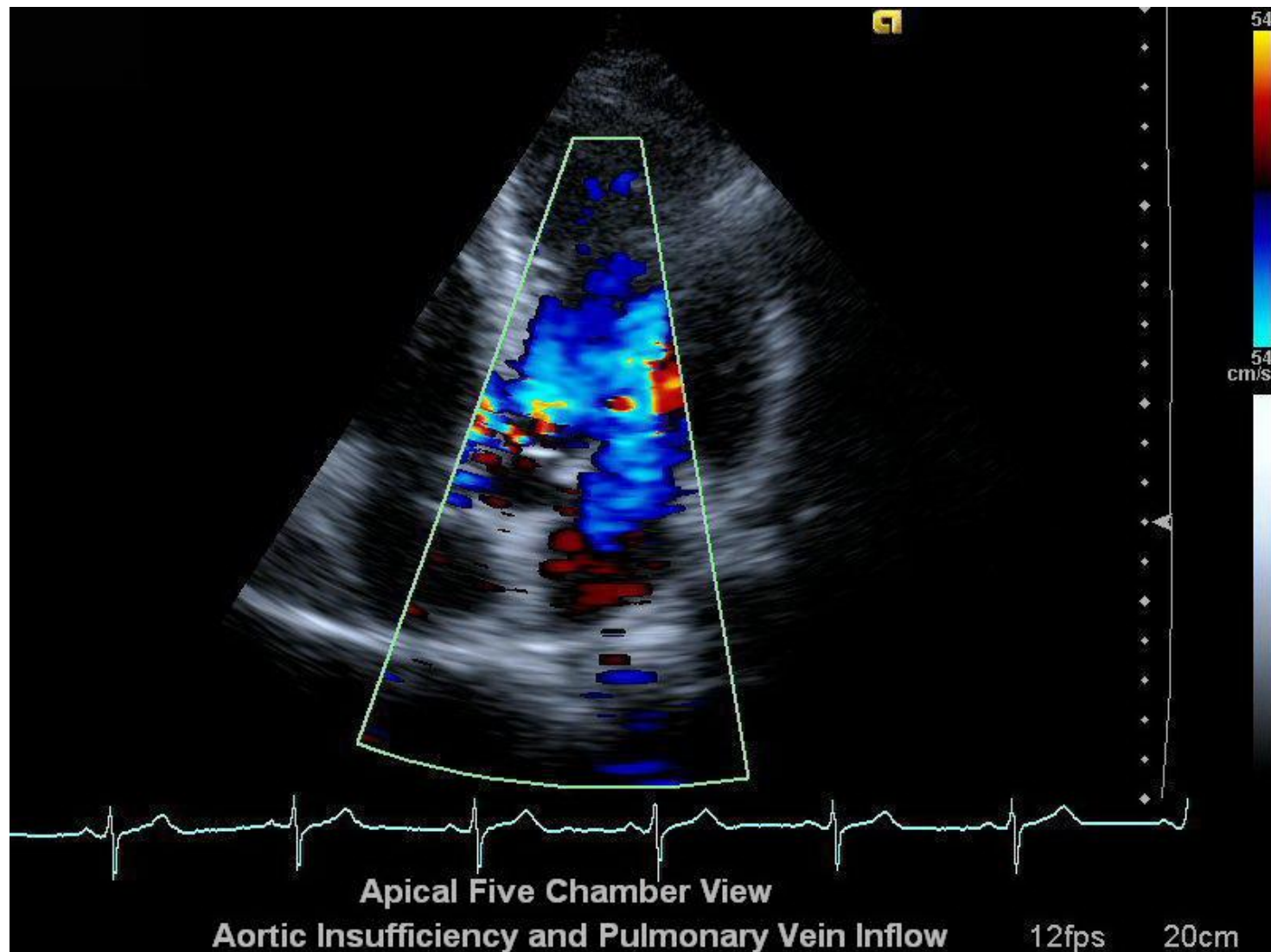
8-bit RGB: *US\_19Segments* (800x600 pixels, 30  
fps, 90 frames)

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8-bit RGB: *US\_Doppler* (800x600 pixels, 12 fps ,12 frames)

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8-bit RGB: *US\_FetalHeart* (800x600 pixels, 40 fps,  
90 frames)

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## 12-bit monochrome

- Computed tomography (CT) image data: 12-bit monochrome, continuous-tone 3D image volumes
- Proposed test sequences
  - *Cardiac* (512x512 pixels , 281 frames)
  - *Longrun* (512x512 pixels, 1463 frames)



**12-bit monochrome: *Cardiac* (512x512 pixels , 281 frames)**

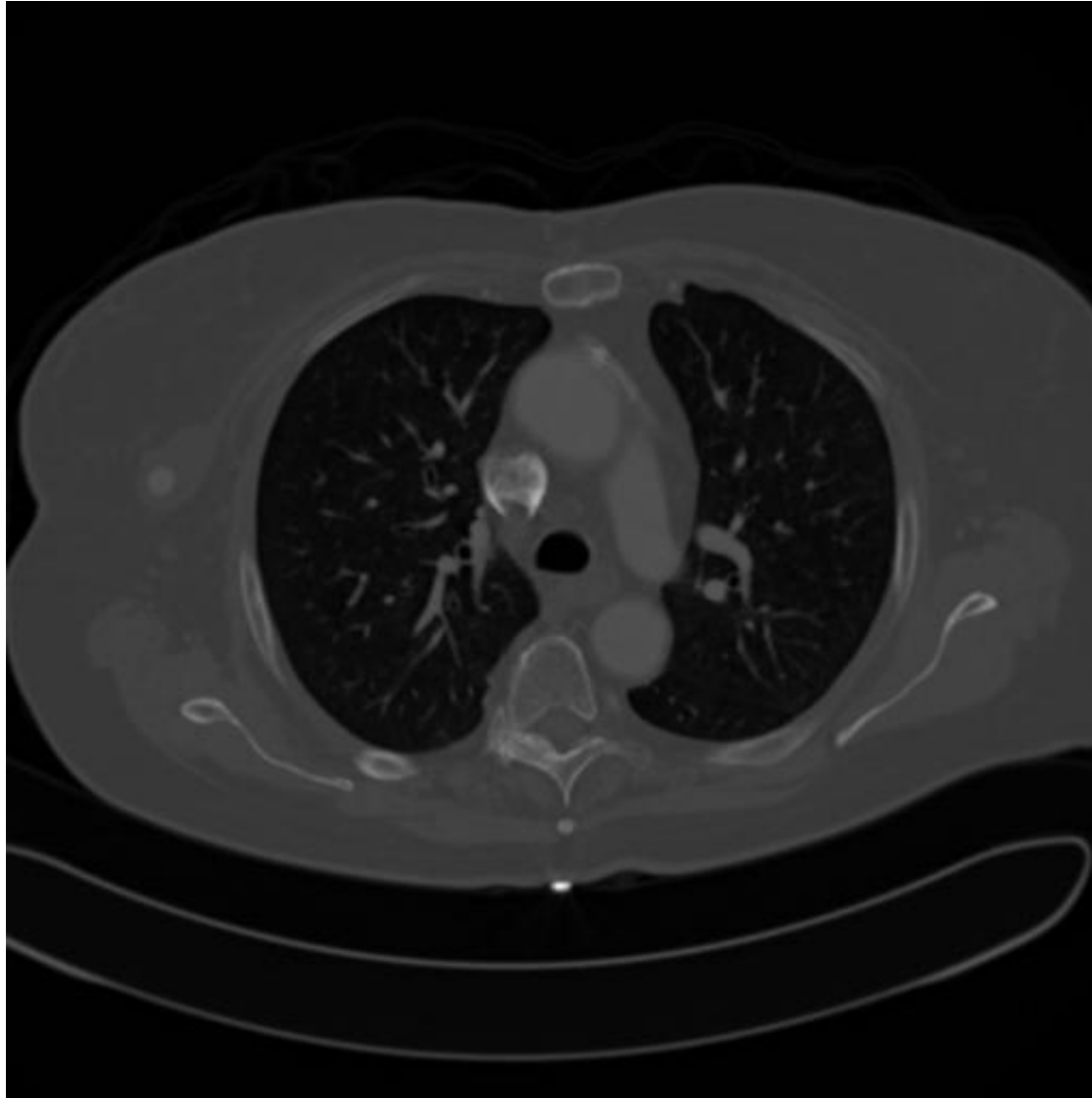
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**12-bit monochrome: *Longrun* (512x512 pixels,  
1463 frames)**

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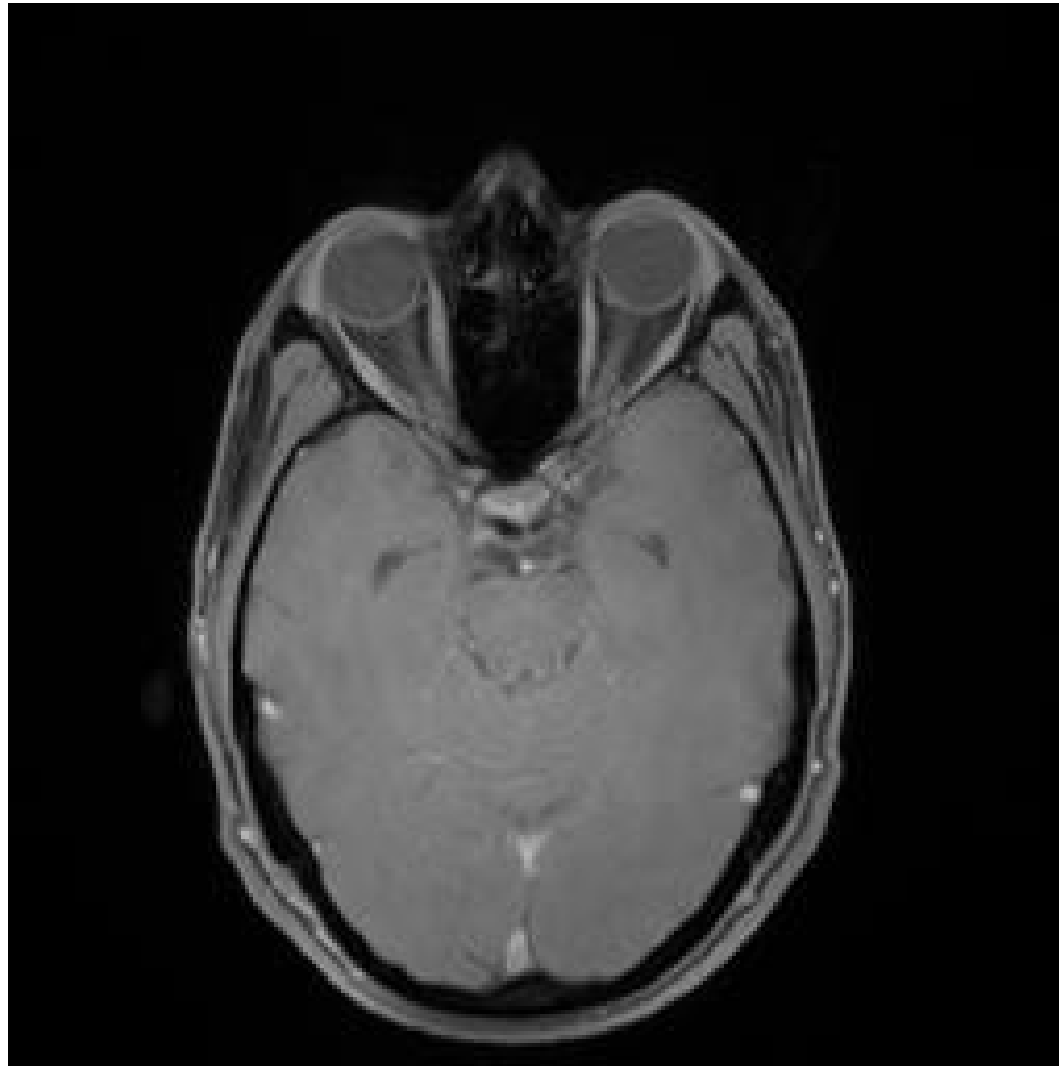


## 14-bit monochrome

- Magnetic resonance (MR) 3D image volumes
- Proposed test sequences
  - *MR\_Axial1* (256x256 pixels, 42 frames)
  - *MR\_Axial2* (512x512 pixels, 13 frames)
  - *MR\_Coronal* (448x512 pixels, 45 frames)

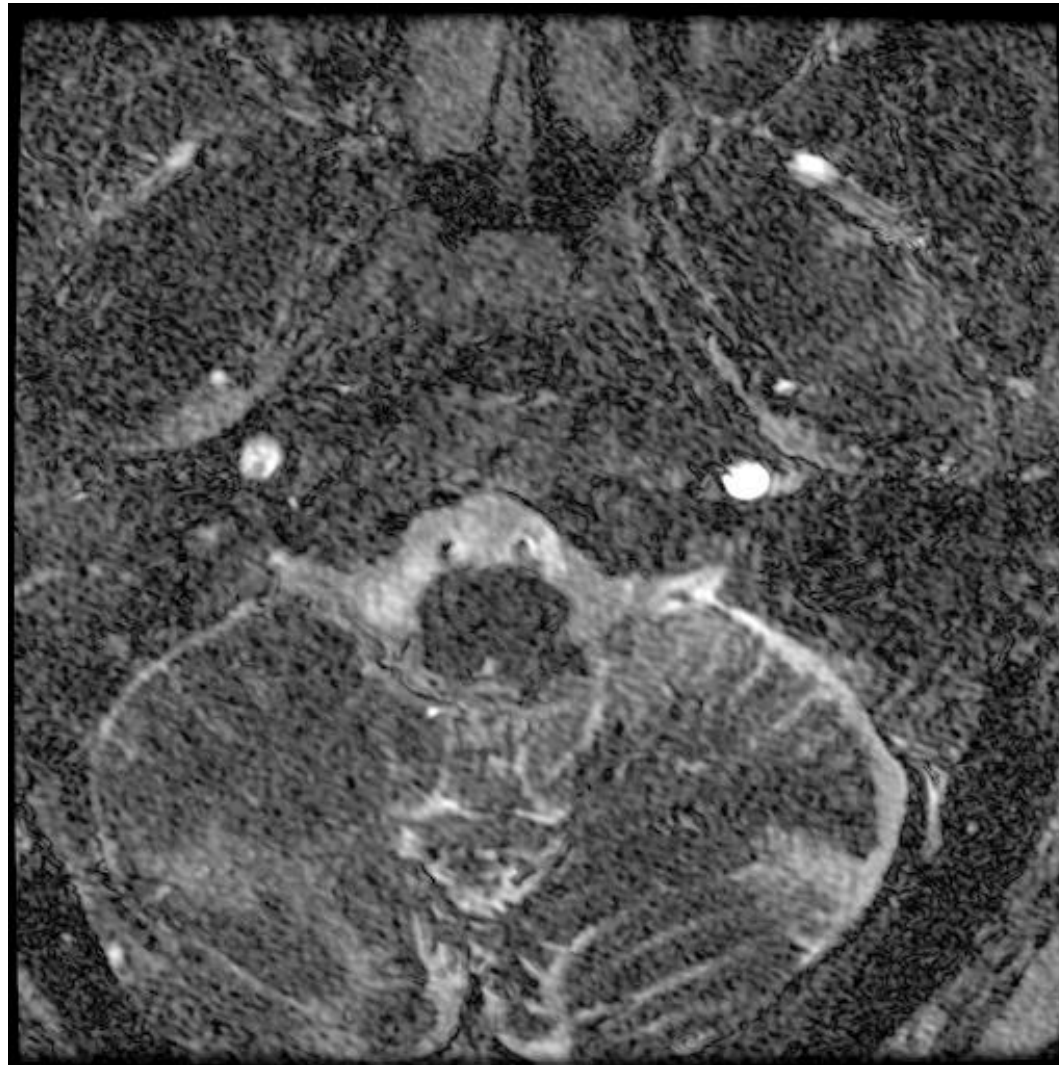
**14-bit monochrome: *MR\_Axial1* (256x256 pixels,  
42 frames)**

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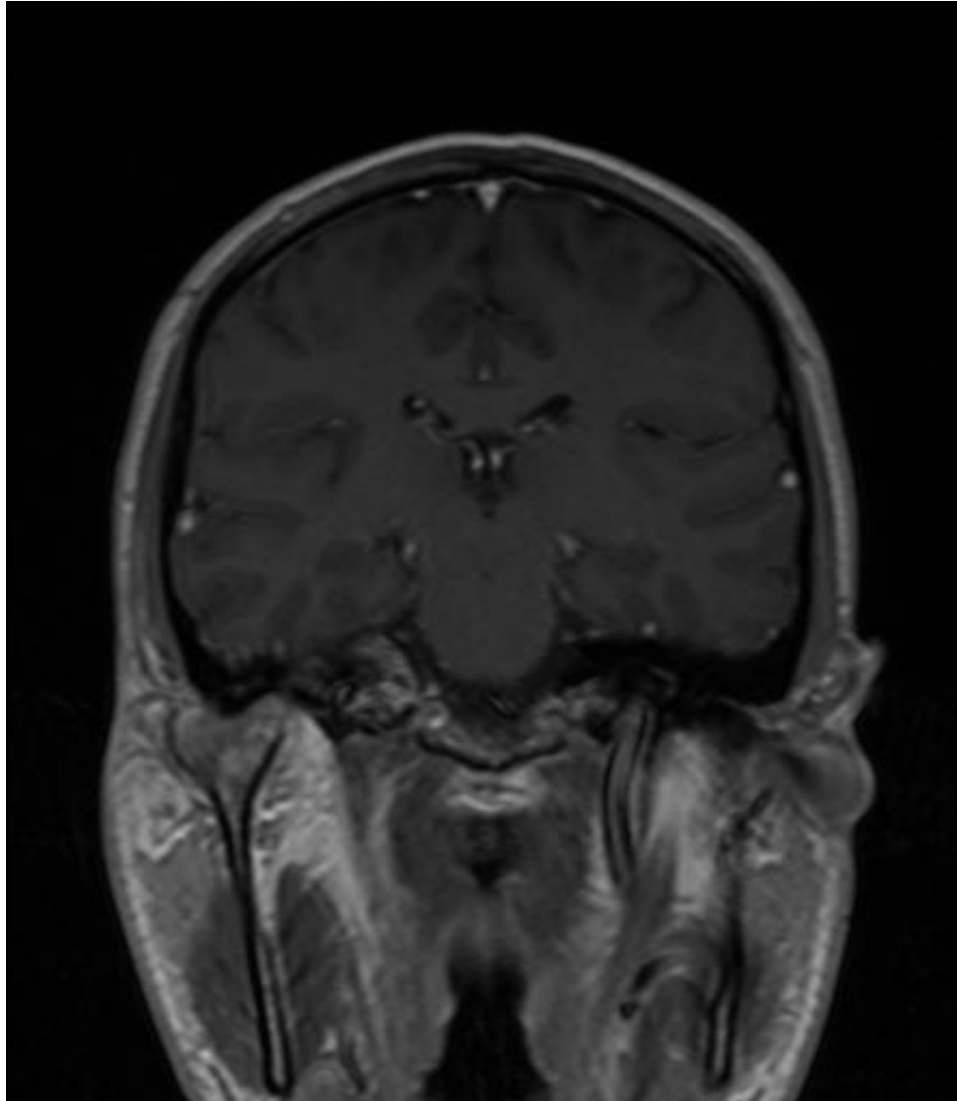
**14-bit monochrome: *MR\_Axial2* (512x512 pixels,  
13 frames)**

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**14-bit monochrome: *MR\_Coronal* (448x512 pixels,  
45 frames)**

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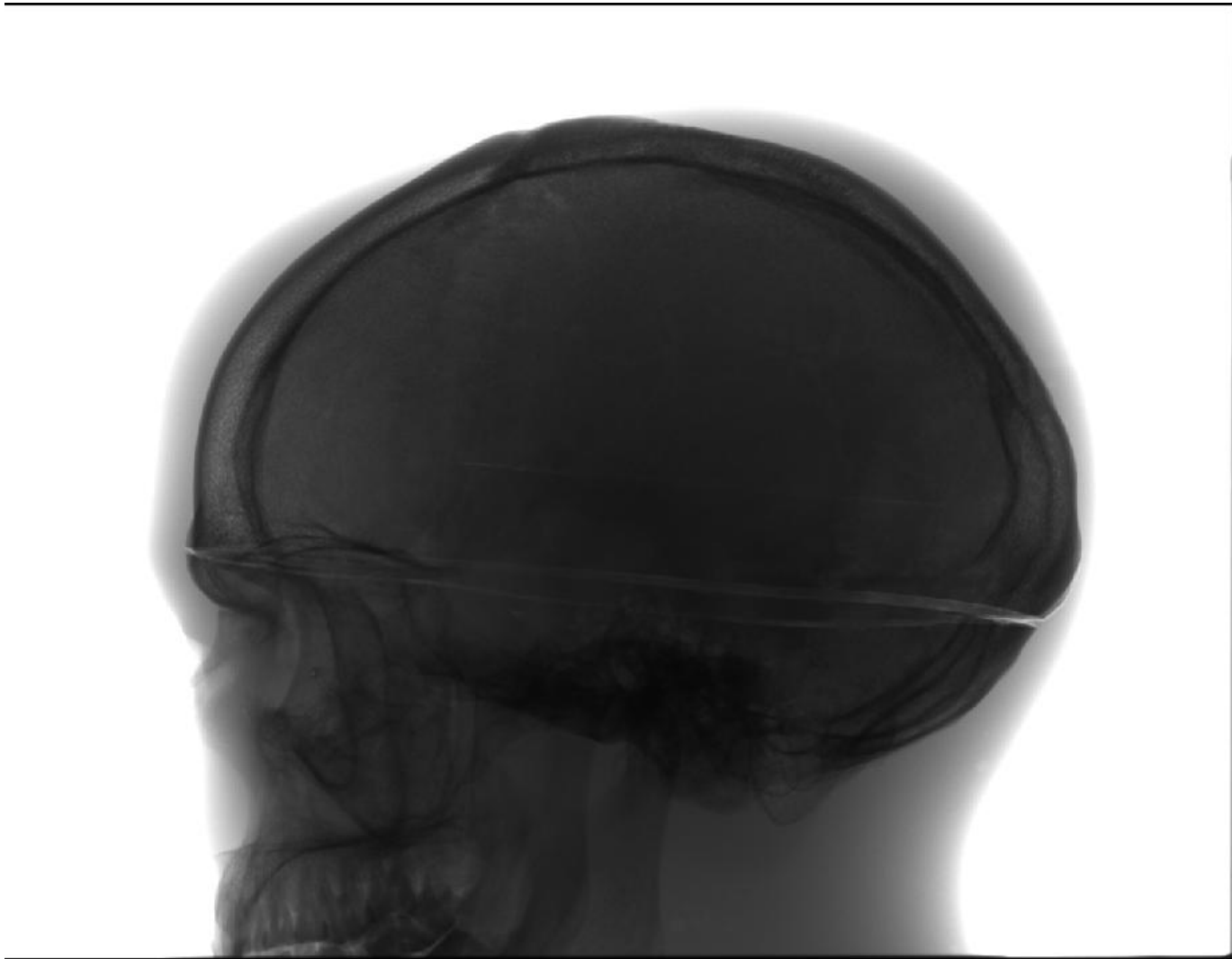


## 16-bit monochrome

- Angiography (AX) image data (2D X-ray projections)
- Proposed test sequences
  - *AX\_Head* (1240x960 pixels, 496 frames)

**16-bit monochrome: *AX\_Head* (1240x960 pixels,  
496 frames)**

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## Summary

Name	Width	Height	Format	Bit depth (nominal)	Bit depth (effective)	Frame rate [fps]	# frames
US_19Segments	800	600	RGB 4:4:4	8	8	30	90
US_Doppler	800	600	RGB 4:4:4	8	8	12	12
US_FetalHeart	800	600	RGB 4:4:4	8	8	40	90
CT_Cardiac	512	512	YUV 4:0:0	12	12	N/A	281
CT_Longrun	512	512	YUV 4:0:0	12	12	N/A	1463
MR_Axial1	256	256	YUV 4:0:0	14	11	N/A	42
MR_Axial2	512	512	YUV 4:0:0	14	14	N/A	13
MR_Coronal	448	512	YUV 4:0:0	14	11	N/A	45
AX_Head	1240	960	YUV 4:0:0	16	16	N/A	496