

# A randomised comparison of Digital Subtraction Angiography and Kinetic Imaging

Viktor Imre Óriás, MD

Leipzig - Germany, 30<sup>th</sup> January 2018

# Disclosure

Speaker name: Viktor Imre Óriás MD

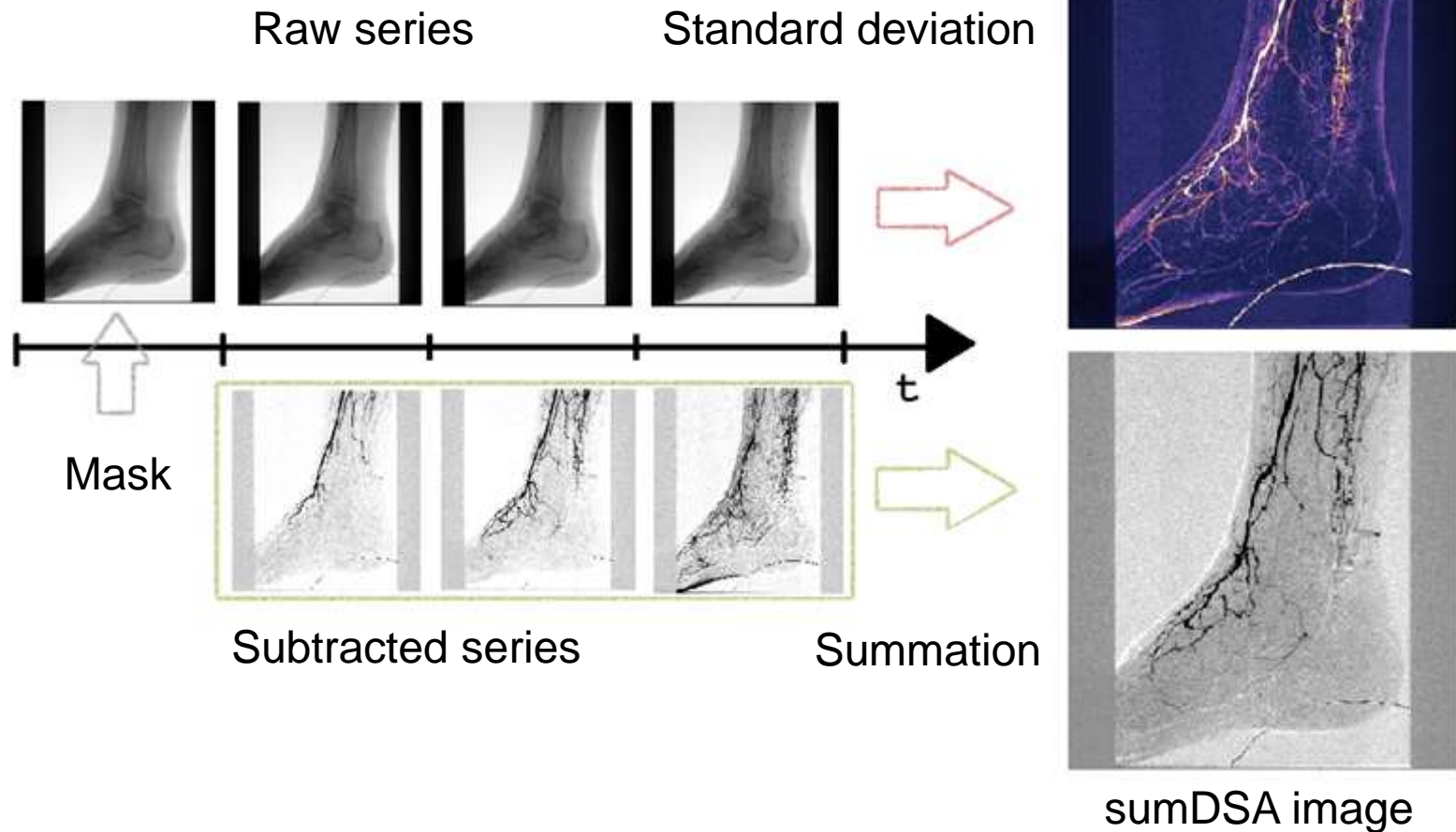
---

I have the following potential conflicts of interest to report:

- Employment in industry: Kinepict Health Ltd.

# Kinetic imaging vs DSA

Kinetic image, Contrast-Enhanced Image (CEI)



# Visual comparison

sumDSA



CEI

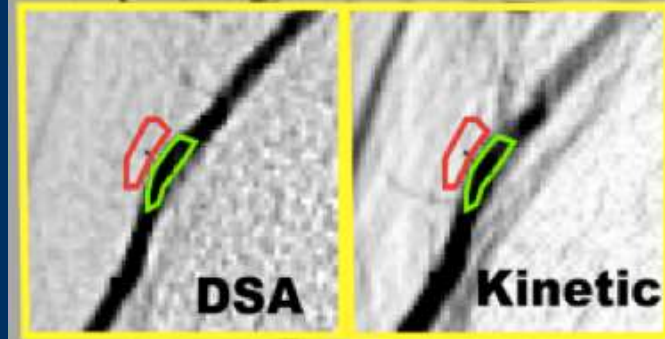


# Signal-to-noise ratio (SNR)

**Signal = mean intensity difference**

---

**Noise = background standard deviation**



# Materials and methods

- Lower limb angiography (42 pts)
  - SNR measurement (1902 ROIs)
- Visual comparison (232 image pairs, 3 vascular surgeons, 2 radiologists)
  - Q1: Which image is more detailed?
  - Q2: In which image are the structures more distinct?
    - Q3: Which image is more useful diagnostically?

# Images for visual comparison

- **Raw sumDSA (rsDSA)**
- **Siemens post-processed sumDSA (ssDSA)**  
rsDSA + Pixel Shift + image quality enhancers  
(Siemens Artis zee with Pure, Siemens Syngo workstation)
- **Kinetic or Contrast-Enhanced Image (CEI)**



# Results - SNR ratios

Confidence interval	$\frac{\text{SNR(CEI)}}{\text{SNR(rsDSA)}}$	$\frac{\text{SNR(CEI)}}{\text{SNR(ssDSA)}}$
< 2,5%	1,34	0,78
> 97,5%	7,68	5,53
<b>median</b>	<b>3,26</b>	<b>2,28</b>



# Results - Visual comparison

## Fleiss' kappa test

	<b>% agreement</b>	<b>% st.dev.</b>	<b>kappa</b>	<b>kappa p</b>
Q1 (more detailed)	<b>75,8</b>	14,1	0,0968	<b>&lt; 0,0001</b>
Q2 (distinction of structures)	<b>74,16</b>	14,22	0,1263	<b>&lt; 0,0001</b>
Q3 (diagnostical usability)	<b>74,07</b>	14,24	0,1265	<b>&lt; 0,0001</b>

# Conclusions

CEIs provide better image quality than DSA

Dose efficiency:

'gold standard' DSA quality - less X-ray or contrast dose

# Thank you for your attention!



[viktor.orias@kinepict.com](mailto:viktor.orias@kinepict.com)

<http://www.kinepict.com>