

The SWAN 2.0 technique generates magnitude and phase images, which are helpful in differentiating between the calcium and blood/iron products. This technique also helps in the differential diagnosis and treatment of neuro infections. SWAN 2.0 provides excellent image quality. With the use of this technique, the necessity of using CT for differentiating between calcification and blood products is eliminated. SWAN is a very good diagnostic tool for trauma-induced micro-bleeds, clot/hemorrhage grading, stroke protocols, AVM, developmental venous anomalies, vascular dementia, neurodegenerative diseases, high resolution images of vascular networks as well as surgical planning/navigation. The SWAN technique has twice as much SNR along with enhanced susceptibility sensitivity. It gives a broader tissue bandwidth and higher spatial resolution is achievable (due to more SNR). With the use of this technique there are fewer artifacts and shorter postprocessing time

### Acquisitions Parameters: SWAN 2.0

|                   |         |
|-------------------|---------|
| Imaging Mode:     | 3D      |
| FOV:              | 24cm    |
| Slice Thickness:  | 3 mm    |
| Frequency:        | 288     |
| Phase:            | 224     |
| Flip angle:       | 15      |
| Band width:       | 41.67   |
| TE:               | 50      |
| TR:               | minimum |
| Location perslab: | 50      |

## A case of Clinical Benefits of SWAN 2.0

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**"SWAN 2.0 is an effective technique for diagnosis of lesions affecting the brain"**

### Patient history

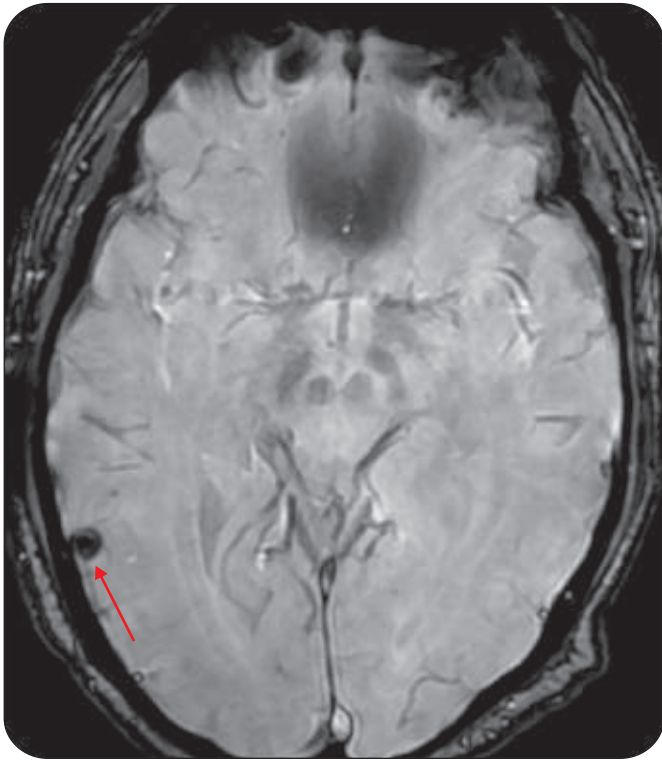
- A 57-year-old male patient presented with complaints of severe headache and vertigo

### Technique & findings

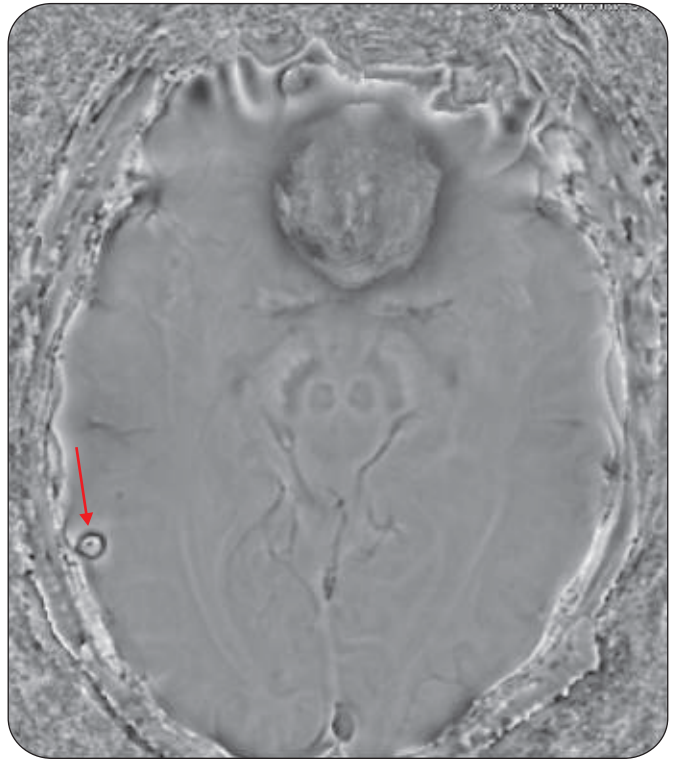
The brain protocol included Axial T1,T2, T2 FLAIR, DWI & SWAN 2.0. The routine MR sequences like T2 images showed few low signal lesions in the brain in terms of size, signal and number compared to SWAN2.0. SWAN2.0 imaging (magnitude/phase images) showed multiple lesions with strong signals and the size of the lesions was larger. In addition to this, SWAN imaging differentiated calcification from blood products. On SWAN 2.0 Magnitude imaging, the calcification and blood products were hypointense, whereas on Phase imaging the calcification was bright and blood products were hypointense.



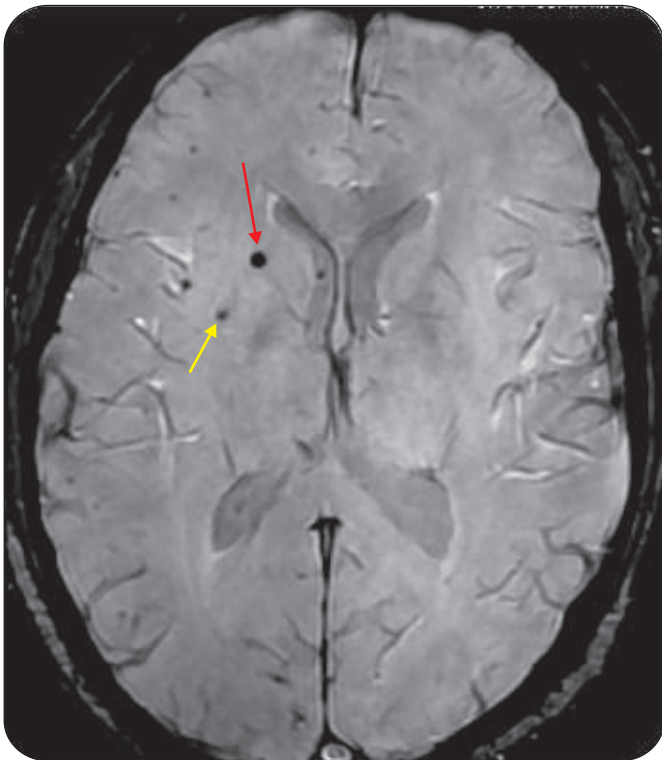
Clinical Images



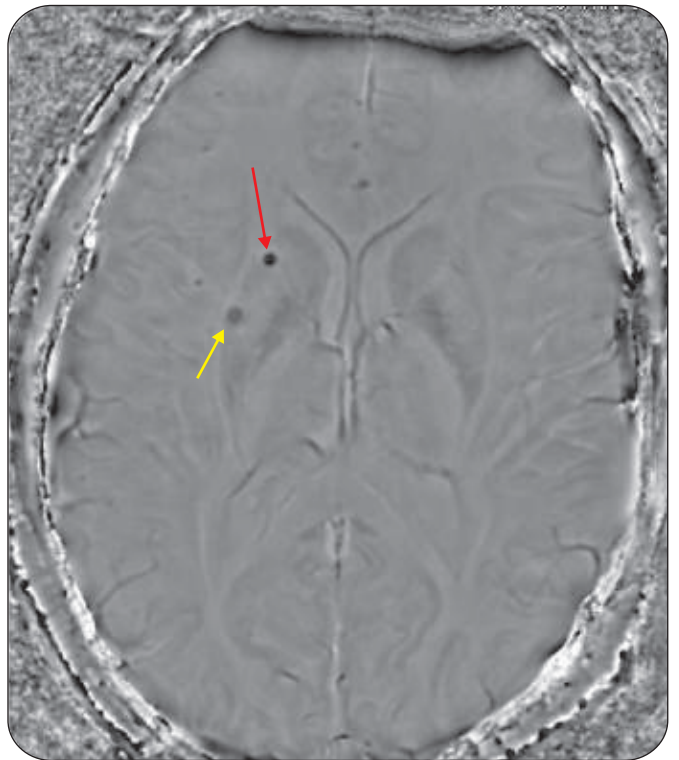
Magnitude Image



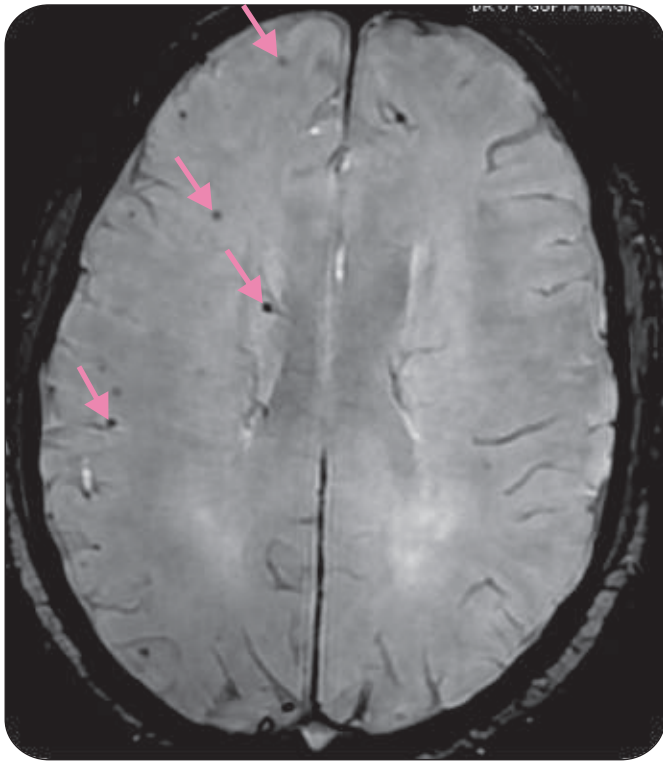
Phase Image



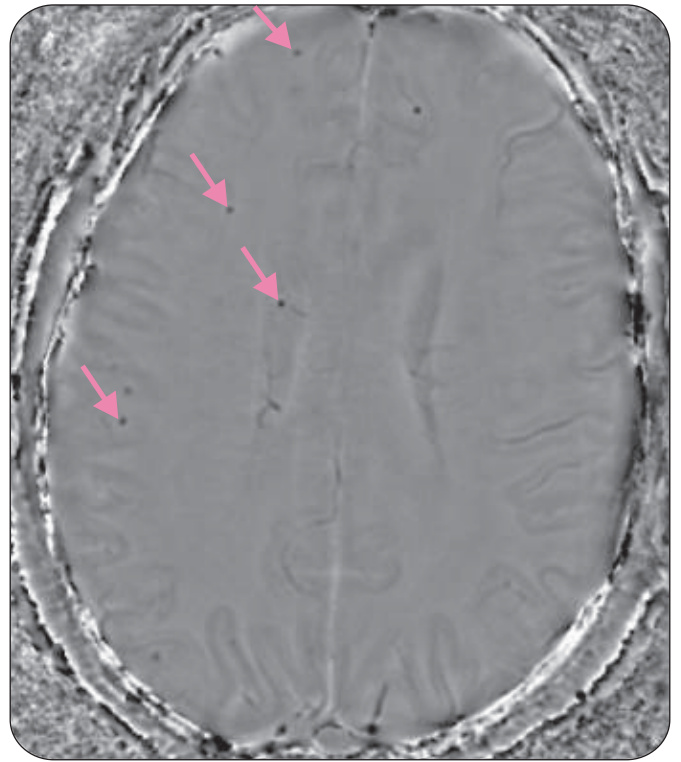
Magnitude Image



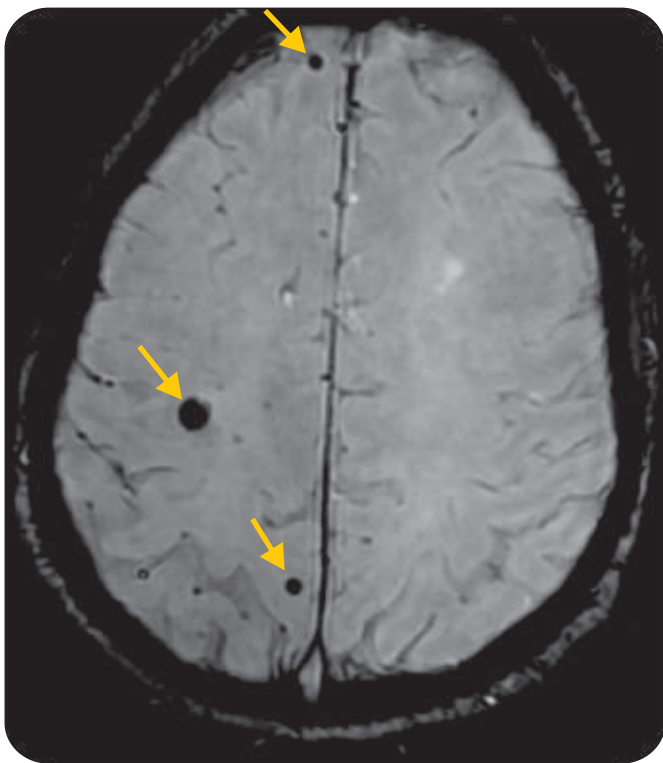
Phase Image



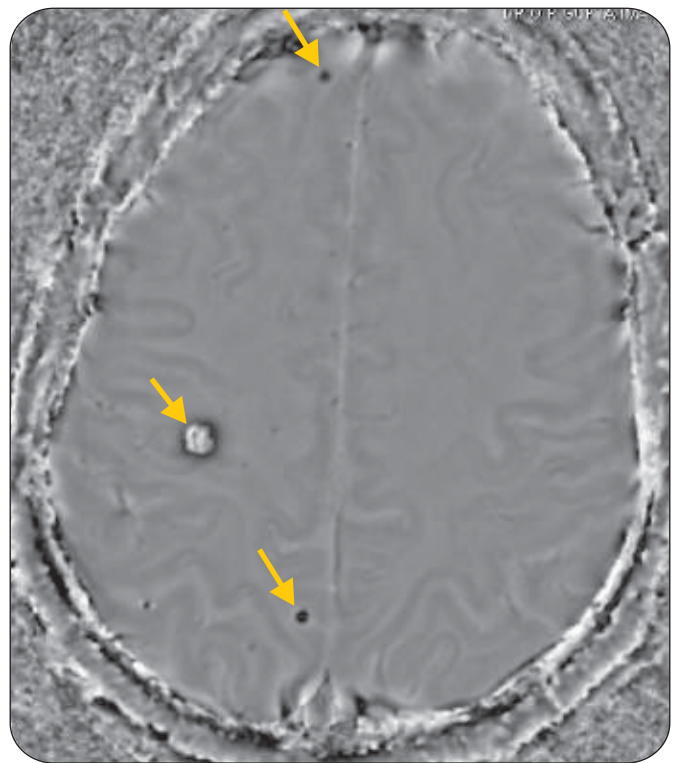
Magnitude Image



Phase Image



Magnitude Image



Phase Image

## Conclusion

The SWAN 2.0 imaging is highly sensitive technique compared to GRE imaging and is able to differentiate between blood and calcification thereby eliminating the need of using CT.

## Benefits of SWAN

- It clearly delineates microbleeds and small veins
- It helps in visualizing vascular structures, iron, calcium
- It has 2x more SNR than single-echo acquisition

Image courtesy to Dr O.P Gupta Imaging Centre

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imagination at work