Non echo planar, diffusion-weighted magnetic resonance imaging (periodically rotated overlapping parallel lines with enhanced reconstruction sequence) compared with echo planar imaging for the detection of middle-ear cholesteatoma

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Dear Sirs,

We read with great interest the above paper by Kasbeker et al.

In the conclusion of this paper, it is stated that 'Casselman and De Foer et al. continue to report on their success with their particular non echo planar imaging sequences. Further studies should assess the reproducibility of results, using Casselman and De Foer and colleagues’ protocols and MRI machines'.

Our group was the first to describe, in 2006, the half-Fourier acquired single-shot turbo spin-echo diffusion-weighted magnetic resonance imaging (MRI) sequence, and to compare it to the routinely used echo planar diffusion-weighted sequences, both in patients prior to first stage surgery and in patients prior to 'second-look' surgery for residual cholesteatoma. In this last, 2008 paper, we concluded that second-look surgery could be replaced by the use of half-Fourier acquired single-shot turbo spin-echo diffusion-weighted sequences.

Despite the above-mentioned conclusion, it should be noted that several groups have in the meantime reported similar findings in peer-reviewed journals.

Dhepnorrarat and Rajan’s group at the University of Western Australia, Perth, Australia, concluded in 2009 that 'turbino spin-echo diffusion weighted' MRI holds a great promise in screening for cholesteatoma as an alternative to exploratory second-look surgery. In another paper, the same group concluded that 'turbino spin-echo' [(half-Fourier acquired single-shot turbo spin-echo)] [diffusion-weighted] MRI is emerging as a cost effective, noninvasive alternative to second-look surgery for detection and screening for cholesteatoma in pediatric patients.

In their study of a paediatric cholesteatoma series, the group led by Plouin-Gaudon (Centre Hospitalier de Valence) and Bossard (Hôpital Privé Jean Mermoz, Lyon, France) reported that '[half-Fourier acquired single-shot turbo spin-echo] diffusion-weighted MRI revealed a cholesteatoma in all true-positive cases. Moreover, no false-positive nor false-negative cases were found'. Furthermore, they were the first to fuse non echo planar diffusion-weighted images and high resolution computed tomography (CT) images in order to precisely localise cholesteatomas.

Huins’ and Lingam’s group (Northwick Park Hospital, London, UK) concluded that '[our study supports the increasing but small body of evidence that non-[echo planar imaging] (i.e. [half-Fourier acquired single-shot turbo spin-echo]) [diffusion-weighted] MRI performs well in detecting cholesteatoma. Its application in detecting residual cholesteatoma in particular is fast becoming a widely accepted practice. We propose that [half-Fourier acquired single-shot turbo spin-echo] [diffusion-weighted] MRI should be performed on all patients before second-look surgery to provide valuable information to the operating surgeon''.

Schwartz, Lane and colleagues, from the Mayo Clinic (Rochester, Minnesota, USA), concluded in their extensive review article that ‘[n]ewer [diffusion-weighted imaging] techniques with thinner section acquisition and decreased susceptibility artifacts allow detection of small lesions. [Diffusion-weighted imaging] can be useful as the primary imaging technique when visualization is impaired by canal wall up mastoidectomy or cartilaginous reconstruction. The [diffusion-weighted imaging] technique may be used in place of second-look surgery, sparing patients the morbidity of repeat exploration’.

All the above-mentioned papers used and/or discussed extensively the half-Fourier acquired single-shot turbo spin-echo diffusion sequence, and, in our opinion, reported similar results and findings to our group, confirming our reported findings.

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References
1 Kasbeker AV, Schoffings DJ, Kenway B, Cross J, Donnelly N, Lloyd SWK et al. Non echo planar, diffusion-weighted magnetic resonance imaging (periodically rotated overlapping parallel lines with enhanced reconstruction sequence) compared with echo planar imaging for the detection of middle-ear cholesteatoma. *J Laryngol Otol* 2011; 125:376–80
8 Huins CT, Singh A, Lingam RK, Kalan A. Detecting cholesteatoma with non-echo planar (HASTE) diffusion-weighted...
In reply to De Foer, the primary aim of our study was to assess the efficacy of the half-Fourier acquired single-shot turbo spin-echo sequence, used by De Foer, that the half-Fourier acquired single-shot turbo spin-echo sequence is unlikely to yield success. We agree within the UK ENT setting. Our work essentially served to report our experience with the half-Fourier acquired single-shot turbo spin-echo sequence detected the two cholesteatomas, and concluded that the half-Fourier acquired single-shot turbo spin-echo sequence was quite favourable, with cholesteatoma detection down to 3 mm and good negative and positive predictive values.

Unfortunately, Huins et al. published their findings after our paper had been accepted for publication; therefore, their study was not identified by our literature search. Their experience with the half-Fourier acquired single-shot turbo spin-echo sequence was quite favourable, with cholesteatoma detection down to 3 mm and good negative and positive predictive values.

References

1 Kasbekar AV, Scoффings DJ, Kenway B, Cross J, Donnelly N, Lloyd SWK et al. Non echo planar, diffusion-weighted magnetic resonance imaging (periodically rotated overlapping parallel lines with enhanced reconstruction sequence) compared with echo planar imaging for the detection of middle-ear cholesteatoma. J Laryngol Otol 2011;125:376–80


4 Huins CT, Singh A, Lingam RK, Kahan A. Detecting cholesteatoma with non-echo-planar (HASTE) diffusion-weighted magnetic resonance imaging. Otolaryngol Head Neck Surg 2010;143:141–16


