CONCLUSION

This study shows that it is possible to generate myocardial images directly from a dynamic $H_2{}^{15}O$ study without the need for a $C^{15}O$ scan. These images can be used for ROI definition. Use of these ROIs provides essentially the same MBF and TF values as when the ROI definition is based on the $C^{15}O$ scan. The elimination of $C^{15}O$ has several advantages: (a) the radiation dose to the patient is substantially reduced (~50%); (b) no gas delivery system and control are required; (c) the study duration is reduced by about 15 min; and (d) the chance of movement artifacts is reduced.

The present method of generating myocardial factor images is robust and results in nearly optimal S/N ratios in the factor images. It has several advantages over traditional factor analysis. It uses a low noise lung curve for modeling the factor curves and determining the final oblique rotation, and it does not use principal component analysis, which is sensitive to noise in the data.

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