Retrospective Analysis of the Appropriateness of Ordered Outpatient Head MRI’s and CT Scans – A Pilot Study

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Retrospective Analysis of the Appropriateness of Ordered Outpatient Head MRI’s and CT Scans – A Pilot Study

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Background

In 2014, as part of the Protecting Access to Medicare Act, many hospitals will be required to adopt some form of decision support software like the ACR SELECT, which includes LVHN. Due to this future requirement, it was decided that a project assessing the baseline appropriate scores in the outpatient setting and potential barriers to implementation would be beneficial to the network and its providers. The purpose of this study was to identify what percent of LVHN’s outpatient ordered head CT and MRI’s are considered appropriate using the ACR-SELECT software. Using LVHN’s EPIC EMR, a database query was compiled for a 100 outpatient head CT and MRI scans for a one month period. Using the ACR-SELECT software, the studies were manually graded and a statistical analysis was performed on the data. Some cases were excluded from the study for various reasons listed in the methodology. Of the 33 CT cases that were scored, 60% were deemed appropriate with an average mean appropriate score = 6.33 and a STD = 2.11. Of the 55 MRI cases that were scored, 89% were deemed appropriate and with an average mean appropriate score = 7.63 and a STD = 1.64.

Results

Of the 100 patients reviewed for CT imaging, 67 were excluded from the review process due to either mislabeling of the type of visit, follow up, or because of documented reasons such as pacemaker’s or aneurysm clips. For the same reasons, 45 patients were excluded from the MRI imaging group. Of the 33 CT cases that were scored, 60% were deemed appropriate with an average mean appropriate score = 6.33 and a STD = 2.11. Of the 55 MRI cases that were scored, 89% were deemed appropriate and with an average mean appropriate score = 7.63 and a STD = 1.64.

The data shows that of the two imaging modalities, CT’s were performed inappropriately more often than MRI’s, but the majority of outpatient studies were scored as appropriate using the ACR SELECT program. However, considering the small sample size, the interpretation of this data is limited at best.

Methodology

Using LVHN’s EPIC EMR, a database query was compiled for all outpatient head CT and MRI scans for a one month period. Using the compiled database query, a hundred patients were randomly selected from the CT group and the MRI group. Patient files were then reviewed and scored based on the type of imaging and the indication for imaging using the ACR-SELECT software. The focus of the study was to review first time outpatient diagnoses; therefore, studies determined to be ED visits, hospital visits, or follow up imaging were excluded from the review process. Appropriateness scores were calculated and studies were given a numerical value ranging from 0-9, where 0-3 = not appropriate, 4-6 = possibly appropriate, 7-9 = appropriate. The data was then analyzed for average mean and statistical variation.

Problem Statement

To identify what percent of LVHN’s outpatient ordered head CT and MRI’s are considered appropriate by ACR SELECT software.

Conclusion

The data shows that of the two imaging modalities, CT’s were performed inappropriately more often than MRI’s, but the majority of outpatient studies were scored as appropriate using the ACR SELECT program. However, considering the small sample size, the interpretation of this data is limited at best.