Sensitivity of ALT and AST tests in monitoring Rheumatology patients for liver toxicity while taking DMARDs in Beaumont Hospital

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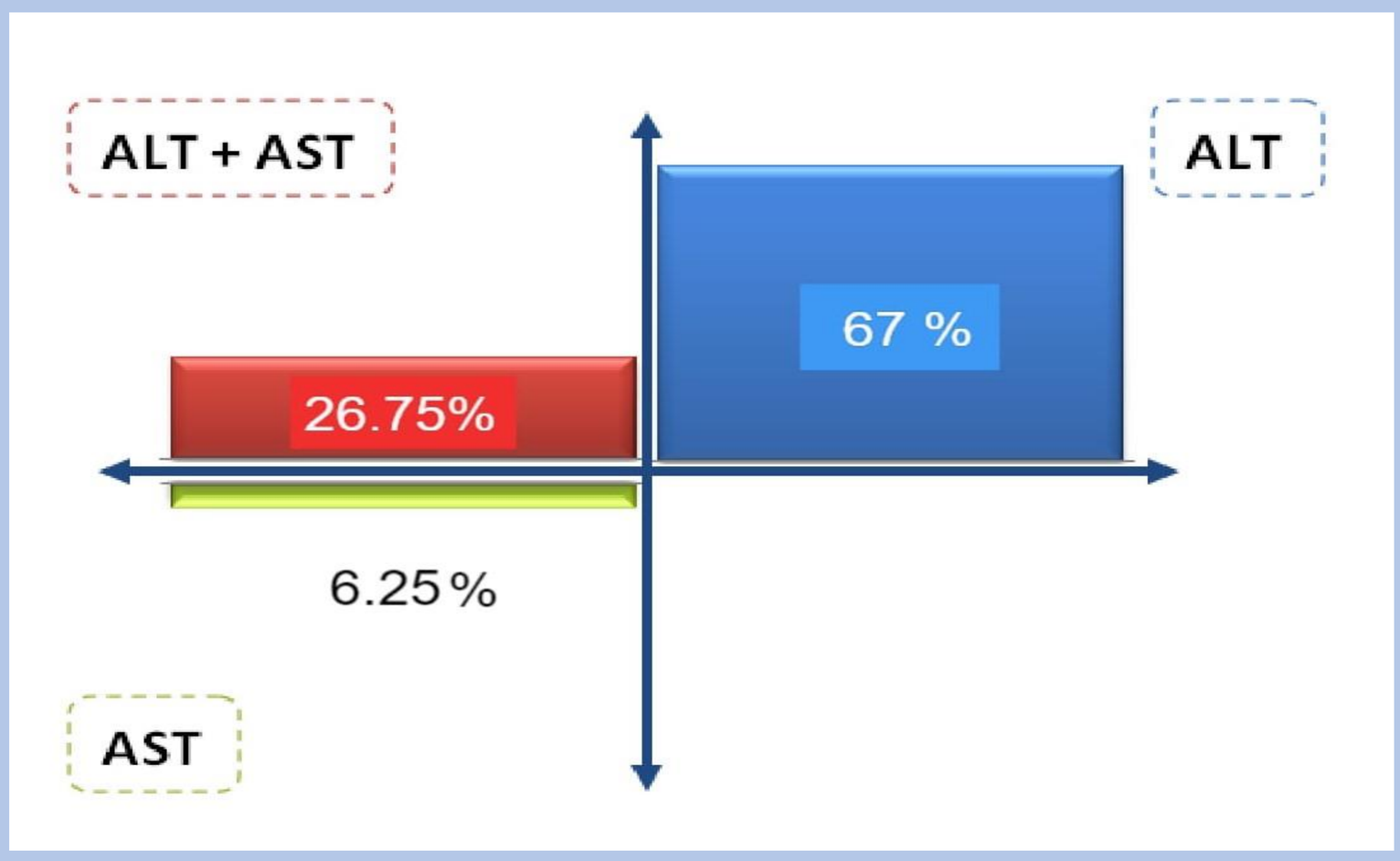
Introduction:
Close monitoring of liver function in patients receiving DMARD therapy for rheumatic diseases is a critical part of patient care. There is no robust evidence to support using either AST or ALT preferentially. Currently the protocol in Beaumont Hospital on our monitoring software (DAWN) is to monitor both ALT and AST.
It is unclear if monitoring both transaminases adds safety value over monitoring ALT alone.

Aims:
To determine whether checking ALT or AST alone is safe and sufficient for DMARD monitoring.
To estimate how many problems might be missed by measuring one transaminase only.

Methods:
We conducted a retrospective longitudinal review of all rheumatology patients being monitored for on DAWN for DMARD therapy in our hospital from 01 January 2011 until 31 December 2018. We identified all patients in that cohort in whom AST levels were > 2 X upper limit of normal, and compared with ALT levels, and also all patients in whom ALT levels were > 2 X upper limit of normal and AST levels were compared. Then the data for each abnormal individual result was reviewed to see if they resulted in a change of management for that patient. We recorded the number of times both AST and ALT were abnormal and when only one was > 2 X ULN and recorded the number of times management was changed and which transaminase was apparently responsible.

Results:
The total number of patients enrolled for monitoring during the 8 years specified period was 2643. The total number of ALT tests performed was 54022, and the total number of AST tests performed was 53625, with 379 cases of single transaminase available. The ALT was > 2 X ULN in 719 cases (1.3 % of all tests), and the AST was > 2 X ULN in 142 cases (0.26%). After exclusion for other unrelated diagnoses, 79 AST results (comprising 48 patients), and 694 ALT results (comprising 276 patients) were analyzed for changes in DMARD management related to results.

Out of the 390 abnormal ALT results associated with a change in management, AST on the same day was > 2 X UNL in only 86 cases (22%) and may not have been high enough to change management in 304 cases (78%).Of the 58 abnormal AST results associated with a change in management, ALT on same day was high enough to change management in 30 cases (52%) and may not have been high enough in 28 cases (48%). The total number of times management was changed based on transaminase results > 2X UNL was 448 (390 + 58). Based on this data, monitoring ALT alone would have missed 28/448 (6.25%) of episodes and monitoring AST alone would have missed 304/448 (67%) of episodes. So ALT is more sensitive in picking up liver toxicity.



Conclusions:
Significant liver injury which dictates change in DMARD management, reflected by transaminase > 2 X UNL was relatively rare in DMARD monitoring (0.82 %), about 8/1000 Liver function tests performed in our cohort. ALT was more sensitive than AST for picking up abnormalities that changed management but using ALT alone for monitoring in our cohort would have missed 6.25% of cases where management was changed. We continue to measure both transaminases in our current practice.