DIVERGENT EXPRESSION OF LIVER AND BRAIN INJURY IN ALCOHOL DEPENDENT COHORT

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INTRODUCTION AND AIMS

Alcohol can cause both liver and brain injury. More insight into the pathogenic role of alcohol is needed, including its link to the two organs along the putative liver brain axis[1] . The present study aims to examine a cohort of alcohol dependent patients and look for evidence of liver and brain injury by screening for liver fibrosis and cognitive impairment respectively to enable further research into alcohol related harm.

DESIGN AND METHODS

Consecutive patients aged 18 to 65 receiving treatment for alcohol dependence were screened for liver fibrosis by Fibro Scan using M and LX Probes. The liver stiffness cut-offs were F ≥ 7.8, F ≥ 11.6 and F ≥ 22.7 kPa for fibrosis stage F2, F3 and F4 respectively[2,3,4] . Cognitive function was screened, with the Montreal Cognitive Assessment (MoCA)[5,6,7], in patients who were at least 2-days abstinent from alcohol and designated as impaired if they scored < 26. Patients with dependence on substances other than alcohol, acute intoxication, withdrawal symptoms, a history of Wernicke-Korsakoff's syndrome, Alzheimer's disease, recent traumatic brain injury, brain tumour, stroke or pregnancy were excluded.

RESULTS

Of the 100 alcohol dependent patients, concurrent liver and brain injury was found in 6% - 18%, depending on the threshold used in terms of fibrosis stage (Table 1).

Table 1

	F< 7.8	F≥ 7.8	Total
MoCA≥ 26	33	17	50
MoCA <26	32	18	50
Total	65	35	100

Almost half of the cohort demonstrated divergent expression of liver and brain injury, most notably, 38% had cognitive impairment but not advanced liver fibrosis (Table 2).

Table 2

	F< 11.6	F≥ 11.6	Total
MoCA≥ 26	38	12	50
MoCA <26	38	12	50
Total	76	24	100

Half of the cohort had cognitive impairment while 24% had advanced liver fibrosis (F3 – F4) (Table 3)

Table 3

	F< 22.7	F≥ 22.7	Total
MoCA≥ 26	44	6	50
MoCA <26	44	6	50
Total	88	12	100

DISCUSSION AND IMPLICATIONS

Contrary to the hypothesis that alcohol related liver disease is a significant contributing factor in the aetiology of alcohol related cognitive impairment, there was no significant association between the two in this cohort.

Variable expression of injury in the liver and brain nevertheless provides opportunities for further research using differential expression on various platforms including genome wide association studies in similar patient populations.

Additionally, the significant proportions of patients with cognitive impairment and advanced fibrosis suggests a need for system wide screening.

Patients with advanced fibrosis need to be on a surveillance program for liver cancer.

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