INTRODUCTION

• Aging related reduction in cerebral blood flow (CBF) has been associated with neurodegenerative disorders including Alzheimer’s disease and dementia.

• Experimentally, a condition of chronic cerebral hypoperfusion due to reduced CBF can be induced by permanent bilateral occlusion of common carotid arteries (2-vessel occlusion, 2VO) in rats.

• Neuroinflammation, leading to neuronal apoptosis and death, is one of the mechanisms which is thought to play a significant role in chronic degenerative neurological disorders.

Aim of the study

• The present study was planned to assess the neuroprotective role of ibuprofen in Alzheimer’s model of rats.

MATERIALS AND METHODS

• This study was conducted on male Sprague Dawley rats, weighing 200-250 grams.

• They were treated in accordance to the Guidelines for The Animal Care and Use Committee, Ministry of Health Malaysia.

• The rats were provided with standard food and water ad libitum.

RESULTS

Histopathological studies

Hippocampal CA-1 Neuronal Cell Number

[Graph showing neuronal cell number comparison between SHAM, 2VO, and 2VO-I groups]

COX-2 mRNA Expression

[Graph showing COX-2 mRNA expression levels between SHAM, 2VO, and 2VO-I groups]

PGE-2 Level Measurement

[Graph showing PGE-2 level measurement between SHAM, 2VO, and 2VO-I groups]

DISCUSSION: The present study revealed that chronic cerebral hypoperfusion-induced neurodegeneration by 2VO increases neuronal cell death and elevates COX-2 mRNA expression and PGE-2 levels in the hippocampus. In ibuprofen-treated 2VO (2VO-I) rats, the viable neuronal cell count of the hippocampal CA-1 region was significantly higher as compared to the untreated 2VO group. For the hippocampal COX-2 mRNA expression, the value in the ibuprofen treated group showed insignificant difference when compared to the untreated 2VO group. However, hippocampal PGE-2 levels were found to be significantly lower in the ibuprofen treated 2VO rats as compared to untreated 2VO rats.

Conclusion: These results clearly indicate that ibuprofen is an effective neuroprotective agent in chronic cerebral hypoperfusion-induced neurodegeneration in rats and can be fruitfully utilized in the management of Alzheimer’s disease.

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