Animal Models as a Research Tool for Blast Induced Traumatic Brain Injuries (bTBI)

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Recent armed conflicts around the world, including conflicts involving the Israel Defense Forces, have been marked by increased usage of explosive devices, especially Improvised Explosive Devices (IEDs). Due to the increasing use of IEDs, there has been a constant rise in the rate of blast-induced injuries, including blast-induced Traumatic Brain Injuries (bTBI). The rise in bTBIs has generated an increase in research in this field, particularly with regard to the mechanism of injury, the search for diagnostic tools and methods, treatment options, and protective measures for the active combat soldier against the threat of bTBI. This review presents several animal models that contributed to the research of bTBI – the rat model, the pig model and the drosophila fly model, as well as the various conclusions made following the use of these models, including the advantages and disadvantages of each model.

Keywords: bTBI–blast induced Traumatic Brain Injury; Animal models; Improvised explosive device; non-Penetrating head injury; Blast injury.