Dexamethasone Indications

Community-acquired meningitis:is a medical emergency, and should be treated immediately with corticosteroids, e.g. IV betamethasone 0.12 mg/kg [1] or dexamethasone before or at least with the first dose of antibiotics [2].

In neurocysticercosis viable and degenerating cysts can promote a severe immunological response and acute episodes should be treated with corticosteroids (e.g. dexamethasone)

Herpes simplex encephalitis treatment unproven

Dexamethasone (DEXA) is widely used in the management of peritumoral edema. Dexamethasone is used for the treatment of many conditions including: rheumatologic problems, a number of skin diseases such as erythema multiforme, severe allergies, asthma, chronic obstructive lung disease, croup, and cerebral edema, in addition to other medications in tuberculosis and a number of other infectious diseases.

It is pregnancy category C in the United States and class A in Australia, meaning it has been frequently used in pregnancy and not been found to cause problems for the baby.

It is on the WHO Model List of Essential Medicines, the most important medications needed in a basic health system.

In experimental and clinical studies conducted by using dexamethasone (DEX), it has been reported that DEX adversely affects learning and memory skills. Unfortunately, there are yet no clinically accepted clinical approaches to prevent DEX-induced cognitive dysfunction.

In a experimental study it was aimed to investigate the effect of chronic DEX administration on learning-memory and locomotor behaviors in adult male Sprague Dawley rats. In addition, it was also aimed to explore the potential favorable contribution of melatonin (MEL) and vitamin C (Vit C) having antioxidant and neuroprotective properties to the effects of DEX on learning-memory and locomotor behaviors. For this purpose, rats were injected 10mg/kg DEX intraperitoneally, both alone and in combination with MEL (40mg/kg) and Vit C (100mg/kg), for 9 days, and the animals were tested using the radial arm maze and open field apparatus. The test results revealed that DEX caused a significant decrease in spatial memory and locomotor activities and MEL and Vit C failed to reverse losses in these activities. Furthermore, DEX led to a gradual weight loss that reached 30% of the initial weight at 9th day of the injection. DEX administration causes a generalized loss of behavioral activity of rats. Experimental studies devised to investigate effects of DEX should take into account this DEX-induced generalized behavioral loss when assessing the effects of DEX on learning and memory skills [3].

Dexamethasone 8-10 mg is associated with a significantly greater perioperative increase in blood glucose compared with a 4-mg dose [4].

Pitter et al., performed a retrospective analysis of glioblastoma patient cohorts to determine the prognostic role of steroid administration. A disease-relevant mouse model of glioblastoma was used to characterize the effects of dexamethasone on tumour cell proliferation and death, and to identify gene signatures associated with these effects. A murine anti-VEGFA antibody was used in parallel as an alternative for oedema control.

They applied the dexamethasone-induced gene signature to The Cancer Genome Atlas glioblastoma dataset to explore the association of dexamethasone exposure with outcome. Mouse experiments were used to validate the effects of dexamethasone on survival in vivo Retrospective clinical analyses identified corticosteroid use during radiotherapy as an independent indicator of shorter survival in three independent patient cohorts. A dexamethasone-associated gene expression signature correlated with shorter survival in The Cancer Genome Atlas patient dataset. In glioma-bearing mice, dexamethasone pretreatment decreased tumour cell proliferation without affecting tumour cell viability, but reduced survival when combined with radiotherapy. Conversely, anti-VEGFA antibody decreased proliferation and increased tumour cell death, but did not affect survival when combined with radiotherapy. Clinical and mouse experimental data suggest that corticosteroids may decrease the effectiveness of treatment and shorten survival in glioblastoma. Dexamethasone-induced anti-proliferative effects may confer protection from radiotherapy- and chemotherapy-induced genotoxic stress. This study highlights the importance of identifying alternative agents such as vascular endothelial growth factor antagonists for managing oedema in glioblastoma patients. Beyond the established adverse effect profile of protracted corticosteroid use, this analysis substantiates the request for prudent and restricted use of corticosteroids in glioblastoma [5].

Dexamethasone acetate (DA) produces neuroprotection by inhibiting lipid peroxidation and inflammation by reducing cytokine release and expression. However, its clinical application is limited by its hydrophobicity, low biocompatibility and numerous side effects when using large dosage. Therefore, improving DA's water solubility, biocompatibility and reducing its side effects are important goals that will improve its clinical utility. The objective of a study is to use a biodegradable polymer as the delivery vehicle for DA to achieve the synergism between inhibiting lipid peroxidation and inflammation effects of the hydrophobic-loaded drugs and the amphipathic delivery vehicle. Wang et al., successfully prepared DA-loaded polymeric micelles (DA/MPEG-PCL micelles) with monodispersed and approximately 25 nm in diameter, and released DA over an extended period in vitro. Additionally, in the hemisection spinal cord injury (SCI) model, DA micelles were more effective in promoting hindlimb functional recover, reducing glial scar and cyst formation in injured site, decreasing neuron lose and promoting axon regeneration. Therefore, data suggest that DA/MPEG-PCL micelles have the potential to be applied clinically in SCI therapy [6].

Dexamethasone for chronic subdural hematoma

Dexamethasone for chronic subdural hematoma

Dexamethasone after subarachnoid hemorrhage

see Dexamethasone after subarachnoid hemorrhage

Dexamethasone suppression test

see Dexamethasone suppression test

Dexamethasone for brain tumor

Dexamethasone for brain tumor treatment

1)
Edberg M, Furebring M, Sjolin J, et al. Neurointensive care of patients with severe com- munity-acquired meningitis. Acta Anaesthesiol Scand. 2011; 55:732–739
2)
Tunkel AR, Hartman BJ, Kaplan SL, et al. Practice guidelines for the management of bacterial meningitis. Clin Infect Dis. 2004; 39:1267–1284
3)
Yılmaz T, Gedikli Ö, Yildirim M. Evaluation of spatial memory and locomotor activity during hypercortisolism induced by the administration of dexamethasone in adult male rats. Brain Res. 2015 Jan 21;1595C:43-50. doi: 10.1016/j.brainres.2014.04.034. Epub 2014 May 4. Review. PubMed PMID: 24796878.
4)
Low Y, White WD, Habib AS. Postoperative hyperglycemia after 4- vs 8-10-mg dexamethasone for postoperative nausea and vomiting prophylaxis in patients with type II diabetes mellitus: a retrospective database analysis. J Clin Anesth. 2015 Aug 21. pii: S0952-8180(15)00208-1. doi: 10.1016/j.jclinane.2015.07.003. [Epub ahead of print] PubMed PMID: 26303274.
5)
Pitter KL, Tamagno I, Alikhanyan K, Hosni-Ahmed A, Pattwell SS, Donnola S, Dai C, Ozawa T, Chang M, Chan TA, Beal K, Bishop AJ, Barker CA, Jones TS, Hentschel B, Gorlia T, Schlegel U, Stupp R, Weller M, Holland EC, Hambardzumyan D. Corticosteroids compromise survival in glioblastoma. Brain. 2016 May;139(Pt 5):1458-71. doi: 10.1093/brain/aww046. Epub 2016 Mar 28. PubMed PMID: 27020328; PubMed Central PMCID: PMC5006251.
6)
Wang Y, Wu M, Gu L, Li X, He J, Zhou L, Tong A, Shi J, Zhu H, Xu J, Guo G. Effective improvement of the neuroprotective activity after spinal cord injury by synergistic effect of glucocorticoid with biodegradable amphipathic nanomicelles. Drug Deliv. 2017 Nov;24(1):391-401. doi: 10.1080/10717544.2016.1256003. PubMed PMID: 28165815.