21-aminosteroids for severe traumatic brain injury

Level I [1]: the use of glucocorticoids (steroids) is not recommended for improving outcome or reducing ICP in patients with severe traumatic brain injury (except in patients with known depletion of endogenous adrenal gland hormones [2] [3]). High-dose methylprednisolone is associated with increased mortality and is contraindicated [4].

Although glucocorticoids reduce vasogenic cerebral edema (e.g. surrounding brain tumors) and may be effective in lowering ICP in pseudotumor cerebri, they have little effect on cytotoxic cerebral edema, which is the more prevalent derangement following trauma.

Significant side effects may occur with steroids [5] , including coagulopathies, hyperglycemia [6] with its undesirable effect on cerebral edema—see Possible deleterious side effects of steroids —and increased incidence of infection (due to immunosuppression). High-dose methylprednisolone is associated with increased mortality [7]

Non-glucocorticoid steroids (e.g. 21-aminosteroids, AKA lazaroids, including tirilazad) [8] [9] and the synthetic glucocorticoid triamcinolone have also failed to show overall benefit [10].

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