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The pathophysiology of traumatic brain injury at a glance

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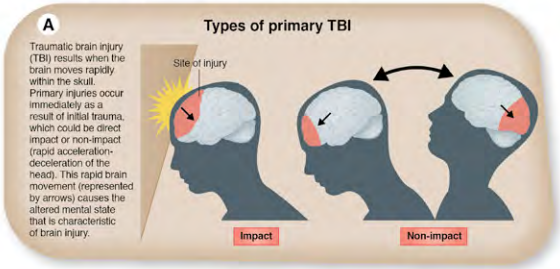

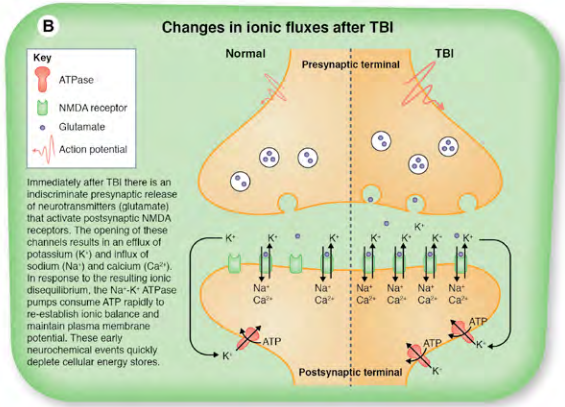

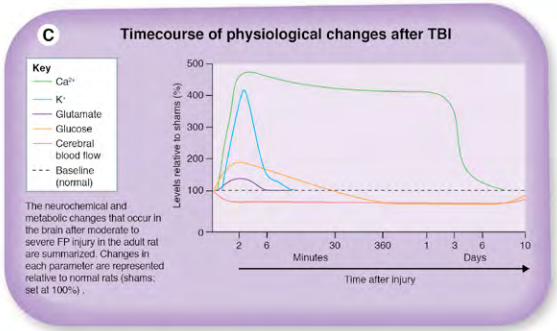

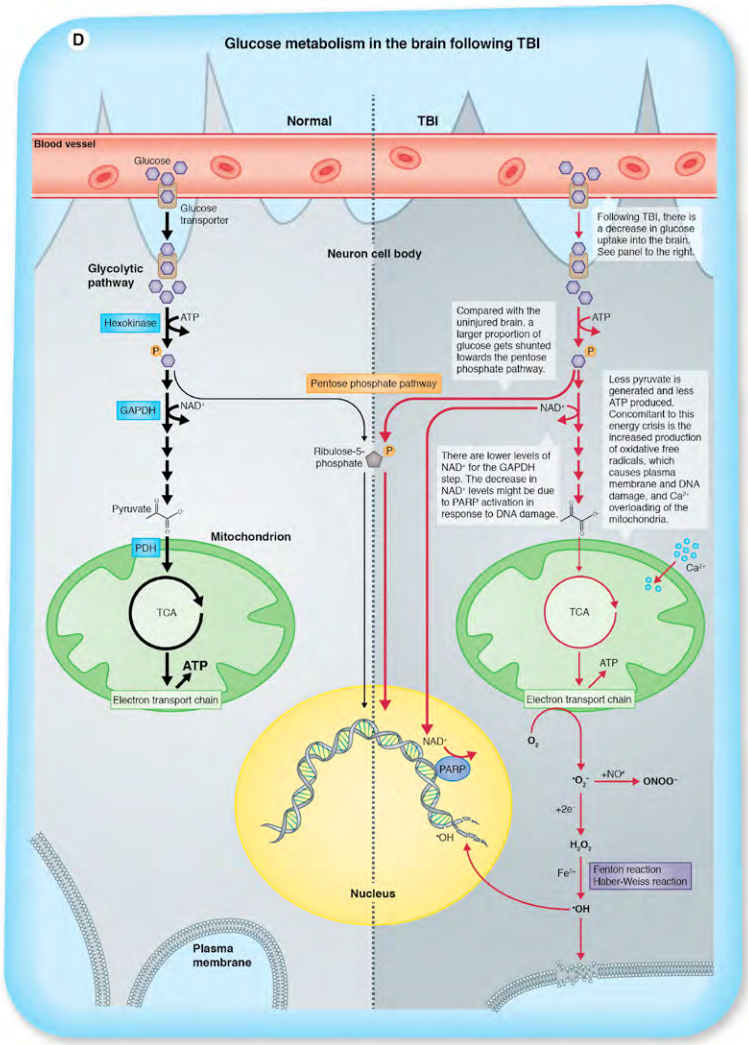

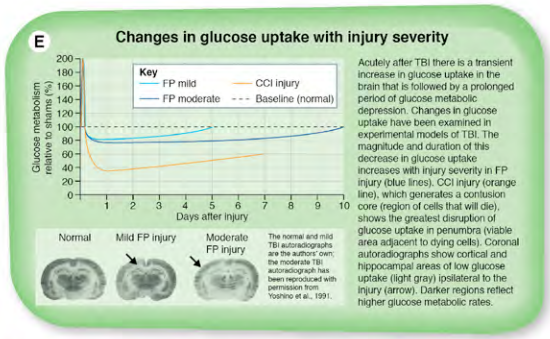

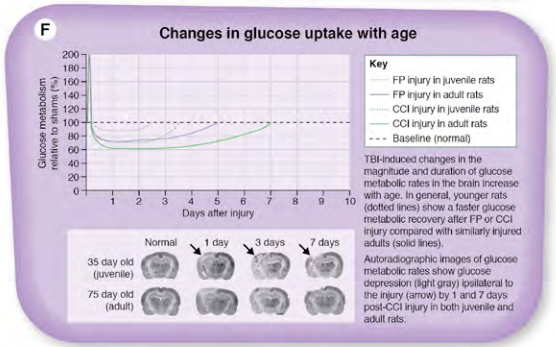

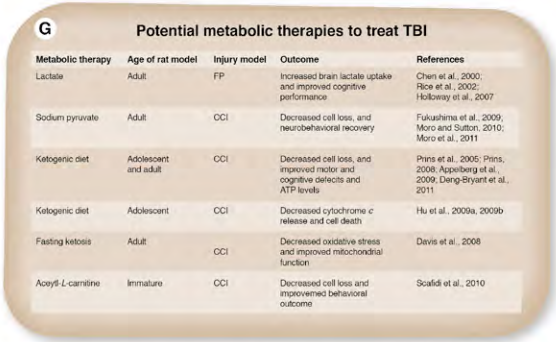

Metabolic therapy	Age of rat model	Injury model	Outcome	References
Lactate	Adult	FP	Increased brain lactate uptake and improved cognitive performance	Chen et al., 2000; Rice et al., 2002; Holloway et al., 2007
Sodium pyruvate	Adult	CCI	Decreased cell loss, and neurobehavioral recovery	Fukushima et al., 2009; Moro and Sutton, 2010; Moro et al., 2011
Ketogenic diet	Adolescent and adult	CCI	Decreased cell loss, and improved motor and cognitive defects and ATP levels	Prins et al., 2005; Prins, 2008; Appelberg et al., 2009; Dang-Bryant et al., 2011
Ketogenic diet	Adolescent	CCI	Decreased cytochrome *c* release and cell death	Hu et al., 2009a, 2009b
Fasting ketosis	Adult	CCI	Decreased oxidative stress and improved mitochondrial function	Davis et al., 2008
Acetyl-*L*-carnitine	Immature	CCI	Decreased cell loss and improvement behavioral outcome	Scafidi et al., 2010

Abbreviations: CCI, controlled cortical impact; FP, fluid percussion; GAPDH, glyceraldehyde 3-phosphate dehydrogenase; NAD, nicotinamide adenine dinucleotide; NMDA, N-methyl-D-aspartate; PARP, poly-ADP ribose polymerase; PDH, pyruvate dehydrogenase; TBI, traumatic brain injury; TCA (cycle), tricarboxylic acid cycle.

See accompanying text for references.

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