BRAIN INJURY MEDICATIONS
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*** PLEASE CONSULT WITH YOUR PHYSICIAN BEFORE MAKING ANY CHANGES IN YOUR CURRENT MEDICATION OR ADDING ANY NEW MEDICATIONS!!!***

The following list of medications used for brain injury-related problems is based on the medical literature and my clinical experience.

CLINICAL INDICATIONS:
Disorders in the following areas:
Aggression, Anxiety, Arousal, Autonomic regulation, Cognition, Conceptual disorder, Eating, Headache, Mood Movement, Obsessions-compulsions, Perception, Seizures, Sexual function, Sleep, Speech-language

AGGRESSION:
Anticonvulsants
Carbamazepin, Valproic acid, Clonazepam, Gabapentin, Lamictal, Topiramate, Neuroleptics, Fluphenazine, Pimozide (especially for negative symptoms; check EKG at start and each dose increase over 10 mg/day), Clozaril (no extra-pyramidal side effects (EPS), but hypotension, hypersalivation, sedation, agranulocytosis)
Risperidone (low EPS), Olanzepine, Quetiapine
Medroxyprogesterone
Lithium carbonate
Amantadine (100 mg up to 100mg qid)
Beta adrenergic blockers
Inderal, Pindolol (up to 60 mg daily; less hypotension secondary to intrinsic sympathomimetic activity)
Calcium Channel Blockers
Verapamil (up to 80 mg. qid), Diltiazem, Nifedipine, Nimodipine (selective for cerebral vasculature)
Antidepressants
Fluoxetine, Sertraline, Paroxetine, Trazodone, Nortriptyline, Desipramine
Amoxapine (metabolized to a neuroleptic), Nefazodone, Mirtazapine
Anti-anxiety medications
Buspirone, Alprazolam, Clonazepam, Lorazepam
Clonidine (hypotension and sedation; .05-.1 mg bid--starting dose. Increase by .1 mg/d, maximum dose = 2.4 mg/d)
Stimulants
Methylphenidate, Dextroamphetamine, Magnesium Pemoline, Adderall
Antihistamines
Hydroxyzine
Anticholinergics
Benztropine, Scopolamine
Dextromethorphan (sustained release) (60-90mg bid)

ANXIETY :
ANXIETY, SOMATIC PREOCCUPATION, HYPOCHONDRIASIS:
Antidepressants, Buspirone, Alprazolam, Clonazepam, Lorazepam

POST-TRAUMATIC STRESS DISORDER:
Tricyclic antidepressants:
Imipramine, Nortriptyline
Selective serotonin reuptake inhibitor antidepressants:
Fluoxetine, Sertraline, Paroxetine
Monoamine oxidase inhibitor antidepressants:
Phenylzine, Parnate
Anti-anxiety agents: 
Alprazolam, Lorazepam 
Beta-adrenergic blockers: Propranolol, Atenolol 
Anticonvulsants: Carbamazepine

**AROUSAL:**
**COMA RECOVERY:**
L-Dopa, Amphetamine, Hyperbaric oxygen, Naloxone 
"Coma Cocktail"
Neurotransmitter precursors 
Vitamin C 100 mg, Co-Enzyme Q10 2400 mg tid, L-Tyrosine 2000 mg/day for one week then add 
Bromocriptine 2.5 mg tid up to 30 mg/d (check bp) (or may use L-Dopa), then 
Dextroamphetamine 5 mg twice daily up to 20 mg/day, then 
Scopolamine patch (to block muscarinic receptors) behind alternating ears q3d (.5 mg/d) (Allen Childs, unpublished)

**LACK OF INITIATIVE, APATHY, IMPAIRED ATTENTION AND MEMORY, HYPERACTIVITY:**
Amphetamine (avoid abrupt withdrawal, leading to depression) 
Bromocriptine, Pergolide, L-Dopa/Carbidopa 
Amantadine (100-400 mg. per day, especially in patients with Parkinsonian symptoms of bradykinesia, rigidity, tremor, reduced spontaneity and initiation) Fluoxetine, Sertraline, Paroxetine, Selegiline 5 mg bid, Risperidone (for negative symptoms in psychosis) 
Methylphenidate, Dextroamphetamine, and L-Dopa give best results in mild to moderate impairments such as mild post-concussion syndrome. 
Psychostimulants are best for mild impairment with decreased attention and memory, apathy and anergy. 
Other dopamine agonists are useful in more severe impairments. 
Presynaptic dopamine agonists: Methylphenidate, Dextroamphetamine, Adderall, L-Dopa 
Postsynaptic dopamine agonists: Bromocriptine (mixed), Pergolide, Amantadine (mixed) 
Other antidepressants: Imipramine, Desipramine, Amitriptyline

**ATTENTION DEFICIT / HYPERACTIVITY:**
Bupropion, Buspirone, Other antidepressants, Carbamazepine 
Psychostimulants 
Methylphenidate, Dextroamphetamine, Adderall, Magnesium pemoline 
Beta-adrenergic blockers 
Inderal, Pindolol, 
Clonidine .05-.1mg bid, increasing by .1mg/d to 2.4 mg/d maximum (hypervigilance, hyperactivity)

**HYPERVIGILANCE AND HYPERACTIVITY:**
Clonidine

**EMOTIONAL INCONTINENCE/PATHOLOGICAL LAUGHING OR CRYING:**
Amitriptyline, Amantadine, L-Dopa, Fluoxetine, Carbamazepine

**AUTONOMIC DYSREGULATION:**
(hyperthermia, diaphoresis, tachycardia, tachypnea)
Bromocriptine, Dantrolene sodium

**COGNITION:** Cognitive impairment in TBI. First evaluate side effects of current medications—anticholinergic, antihistaminic, sedative. These could lead to impaired memory, attention and concentration. 
Naltrexone, Ergoloid mesylates, Nimodipine, Nicotine, Donepezil

**CONCEPTUAL DISORDERS:**

**PSYCHOSIS:**
Neuroleptics 
Fluphenazine, Clozaril, Risperidone, Olanzepine, Quetiapine
Anticonvulsants

**MONOSYMPTOMATIC DELUSIONS, PATHOLOGICAL JEALOUSY:**
Pimozide, Fluoxetine

**EATING DISORDERS:**
**OVEREATING:**
Fluoxetine, Trazodone, Naltrexone, Sibutramine

**LACK OF APPETITE:**
Cyproheptadine

**EXCESSIVE WATER DRINKING:**
Demeclocycline (600 mg bid), Lithium carbonate, Captopril (12.5 mg/d)

**MOOD DISORDERS:**

**DEPRESSION:**
Incidence of post-TBI depression: 15 - 25%. Depression may occur without a feeling of sadness. It may manifest as agitation, irritability, lack of pleasure, impaired cognition.

**Antidepressants:**
Desipramine (not sedating), Nortriptyline (sedating), Bupropion (low anticholinergic and antihistaminic side effects; activating), Trazodone (sedating), Fluoxetine, Sertraline, Paroxetine (low anticholinergic and antihistaminic side effects; activating), Amoxapine (metabolized to neuroleptic), Nefazodone (lower incidence of insomnia, GI upset, weight gain), Mirtazapine, Venlafaxine, Selegiline (MAOI, no dietary restriction when used at Parkinson's Disease doses of 5-10 mg/d; antidepressant doses, 15-60 mg/d, require low tyramine diet; metabolized to amphetamine)

Psychostimulants
Methylphenidate, Dextroamphetamine, Magnesium pemoline, Adderall

**TREATMENT- RESISTANT OR PARTIALLY RESPONSIVE DEPRESSIONS:**
(a) Increase dose until benefits or side effects appear
(b) Change to another antidepressant
(c) Add a second antidepressant
(d) Augment antidepressants with: Buspirone, Lithium Carbonate, Thyroxine, Tri-iodothyronine, Atypical Neuroleptic, Anticonvulsant, Pindolol

**MANIC DISORDER:**
Lithium Carbonate
Anticonvulsants
Carbamazepine, Valproic acid, Clonazepam, Gabapentin, Lamotrigine
Calcium Channel Blockers
Verapamil, Diltiazem, Nifedipine, Nimodipine
Neuroleptics
(If single agent ineffective, consider low dose Lithium + anticonvulsants +/- neuroleptic)

**POST-TRAUMATIC HEADACHES:**
Nonsteroidal anti-inflammatories (NSAIDs) Antidepressants (tricyclic)
Calcium channel blockers
Verapamil, Diltiazem, Nifedipine, Nimodipine (selective for cerebral vasculature) Phenylzine (MAOI antidepressant)

**MOVEMENT DISORDERS:**

**ABSENCE OF MOVEMENTS AFTER TBI:**
Neostigmine, Physostigmine, Bromocriptine, Amantadine

**INCOORDINATION**
L-tryptophan, Thyrotropin-releasing hormone (oral), Propranolol, Gamma-vinyl GABA, Acetazolamide, Phthalazinol

**DYSTONIA:**
Dopamine agonists: Bromocriptine, L-dopa
Anticholinergics: Benztropine, Trihexyphenidyl
Baclofen
Benzodiazepines: Diazepam, Alprazolam, Lorazepam
Carbamazepine
TREMORS:
Beta-adrenergic blockers: Propranolol, Atenolol, Pindolol
Benzodiazepines, Dopamine agonists, Valproic acid, Anticholinergics, Isoniazide

PARKINSONISM:
(bradykinesia, dysarthria, decreased facial expression, rigidity)
Selegiline, L-Dopa, Pergolide, Bromocriptine

AKATHISIA:
Bromocriptine, Propranolol, Cyproheptadine

MYOCLONUS:
Clonazepam, Trazodone, L-Tryptophan, Valproic acid, Primidone, Piracetam

DYKINESIAS:
Dopamine agonists, Anticonvulsants

NEUROGENIC HETERO TOPIC OSSIFICATION:
Etidronate disodium, Nonsteroidal anti-inflammatory meds (NSAIDs)

OBSESSIVE-COMPULSIVE DISORDER:
Fluoxetine, Sertraline, Paroxetine, Clomipramine (May add Buspirone or atypical neuroleptic to antidepressant)

PERCEPTUAL DISORDERS:
HEMI-INATTENTION / NEGLECT:
Bromocriptine

SEIZURE DISORDERS:
Carbamazepine (partial seizures, simple or complex) Valproic acid (multi-focal or generalized seizures), Gabapentin (metabolized by kidneys), Lamotrigine, Topiramate

SEXUAL DISORDERS:

HYPOSEXUALITY:
Antidepressants, Yohimbine, Testosterone, Sildenafil

HYPERSEXUALITY:
Females:
(Sexual assault, frequent masturbation, violent erotic dreams, with normal testosterone levels)
Cyproterone acetate (androgen receptor blocker) 25-50 mg/d (days 5-15 of menstrual cycle)
Ethynyl estradiol 50 mcg/day (days 5-25 of menstrual cycle)
Males:
Medroxyprogesterone im: approx. 200 mg/week decreasing to 200mg/mo with testosterone level maintained at 100 po: 60-200mg/d (fewer side effects with low dose p.o. than i.m.)
Depo-leuprolide acetate 7.5 mg im/mo, Cyproterone acetate 50mg bid, Conjugated estrogens
Both males and females: fluoxetine and other serotonin re-uptake inhibitors ( reduced sex drive and function in 30% )

SLEEP DISORDERS:
NARCOLEPSY:
Fluoxetine, Psychostimulants

INSOMNIA:
Antidepressants (sedating), Valproic acid, Zolpidem, Clonazepin

SPEECH - LANGUAGE DISORDERS:

MUTISM:
Physostigmine 1 mg i.m. one time weekly x three weeks
Bromocriptine 2.5-5 mg twice daily up to 45 mg/day (increase the dose about every one month)
Imipramine

DYSPHAGIA:
L-dopa

DYSPHASIA:
Bromocriptine

DYSARTHRIA:
Clonazepam

About the author:
Daniel Gardner, MD is in the private practice of psychiatry, psychoanalysis, and neurobehavioral medicine in San Diego and Solana Beach, California. He provides treatment (problem solving, skill building, and medication management) and consults on quality of care issues with TBI
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