# Post-Stroke Depression

# A Review

Dr. Milena Rogan Ducic, MD FRCPC
Geriatric Psychiatry PGY-6 Resident

Dr. Maria Hussain, MD FRCPC
Geriatric Psychiatrist

# Disclosures

- No conflict of interest

# Objectives

**Review:**

- The prevalence, etiology and risk factors for Post-Stroke Depression (PSD)
- The impact of PSD
- Screening and assessment guidelines for PSD
- Non-pharmacological and pharmacological management strategies

# Prevalence

- 62 000 people with stroke and TIA are treated in Canadian hospitals every year

- 1/3 of individuals who experience stroke develop PSD
  - Most frequent psychiatric complication following stroke

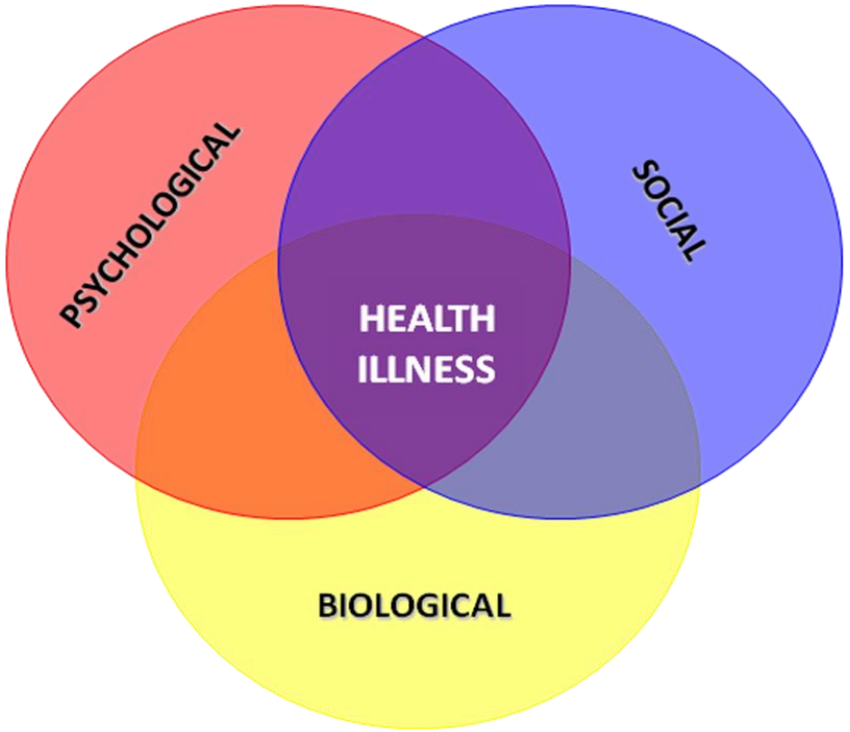
- Existing prevalence data may be difficult to interpret

1. Chollet, F., et al. J Neurol, 2014

## Etiology

- Psychological reaction to critical illness

- Physiological consequence of stroke
  - Lesion location
  - Neurotransmitters
  - Inflammatory cytokines
  - Gene polymorphisms




1. Fang, J., Cheng, Qi. Neurological Research, 2009
2. Hayhow, B., et al. The Behavioural Consequences of Stroke Ch 25, 2014

# Etiology

- Lesion location
  - Frontal, subcortical, basal ganglia lesions have been implicated
  - Greatest association: left hemisphere, proximity to the frontal pole
  - In hospitalized and < 28 days following stroke: left hemisphere
  - Community samples and after 1-4 months: right hemisphere
  - 'Silent infarcts' have also been linked to depression


1. Carota, A., Paolucci, S. The Behavioural and Cognitive Neurology of Stroke, Ch 29, 2013
2. Fang, J., Cheng, Qi. Neurological Research, 2009
3. Wei, N., et al. J. Neurol, 2015
4. Whyte, E.M., et al. Biol Psychiatry, 2015

# Etiology

- Neurotransmitters
  - Ischemia-induced enzyme inhibition leads to decreased monoamine synthesis
  - Metabolite of serotonin is low in the CSF of post-stroke depression patients

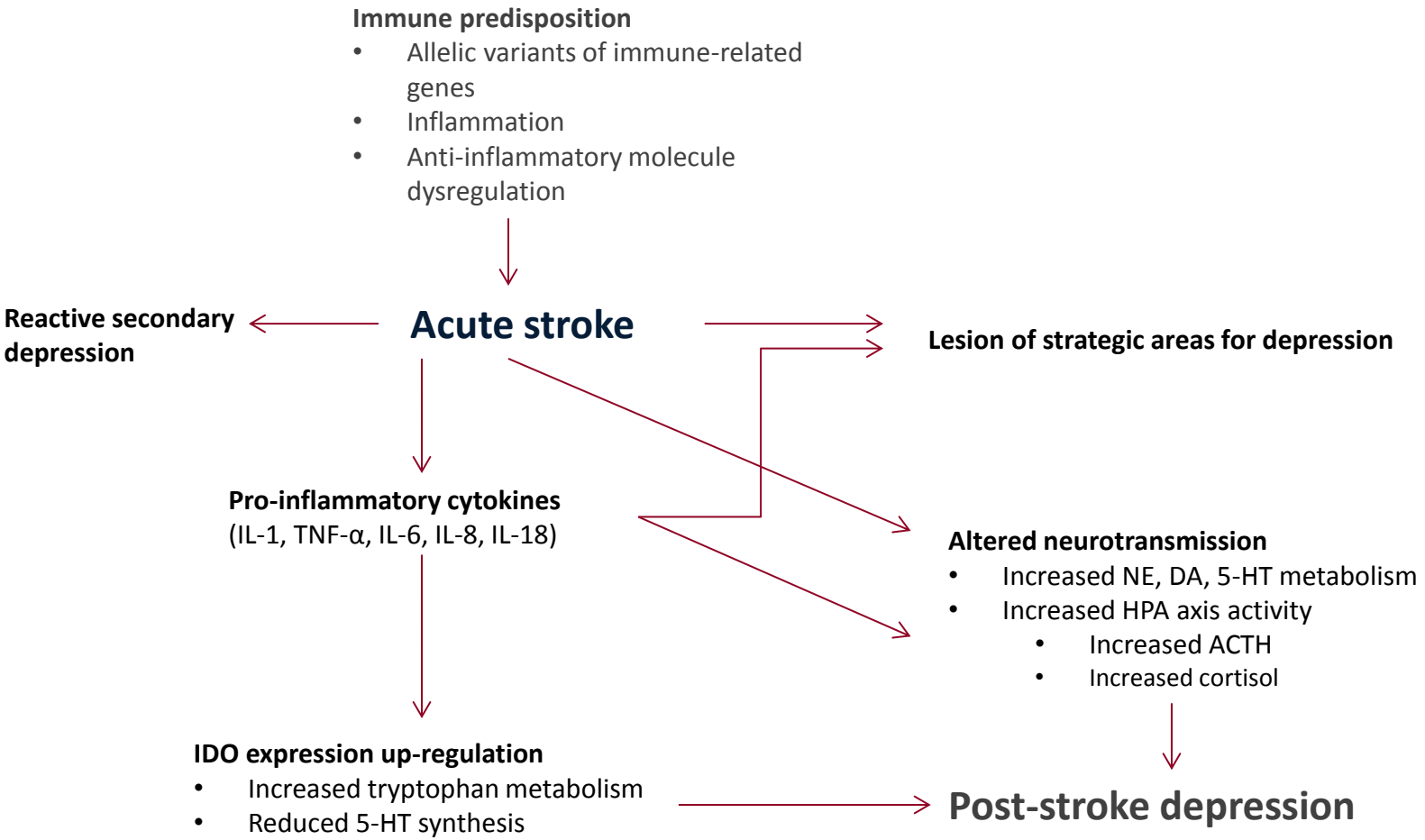

1. Carota, A., Paolucci, S. The Behavioural and Cognitive Neurology of Stroke, Ch 29, 2013
2. Fang, J., Cheng, Qi. Neurological Research, 2009
3. Spalletta, G., et al. Molecular Psychiatry, 2006

# Etiology

- Inflammatory Cytokines
  - Stroke induces an inflammatory response
  - Increase in IL-1β, TNF-$\alpha$, and IL-18
  - Inflammatory cytokines alter serotonin function


1. Fang, J., Cheng, Qi. Neurological Research, 2009
2. Spalletta, G., et al. Molecular Psychiatry, 2006

# Etiology




1. Spalletta, G., et al. Molecular Psychiatry, 2006

# Risk Factors

- Increasing stroke severity
- Functional dependence
- Presence of cognitive impairment
- Previous history of depression

- Risk increases exponentially if more than one risk factor is present


1. Dobkin, B. N Engl J Med, 2005
2. Hayhow, B., et al. The Behavioural Consequences of Stroke Ch 25, 2014

# Consequences

- Poor functional recovery
- Increased risk for dependence
- Poorer cognitive function
- Reduced social participation
- Increased hospital visits, length of stay in hospital
- Increased depression in family and caregivers (30-60%)
- Suicidal ideation (10-15%)
- Increased mortality risk


1. Carota, A., Paolucci, S. The Behavioural and Cognitive Neurology of Stroke, Ch 29, 2013
2. Hayhow, B., et al. The Behavioural Consequences of Stroke Ch 25, 2014

# Screening

- Canadian Best Practice Recommendations for Stroke Care (4th Ed.)
  - Identification, diagnosis and treatment is associated with better outcomes
  - All patients considered at high risk
  - Screening should be done in all settings and at all stages, transitions

# Screening

- Canadian Best Practice Recommendations for Stroke Care (4th Ed.)

- Screen using a validated tool
  - Hospital Anxiety and Depression Scale
  - Geriatric Depression Scale
  - Patient Health Questionnaire-9 (PHQ-9)
  - Stroke Aphasic Depression Questionnaire
  - The Hamilton Depression Rating Scale (HDRS)
  - The Beck Depression Inventory

Recommended

# Assessment

- Canadian Best Practice Recommendations for Stroke Care (4th Ed.)
  - At risk patients should be managed by a healthcare professional with expertise in post-stroke depression
  - DSM Diagnosis:
    - 'Mood disorder due to a general medical condition'
  - Overlap between stroke and depressive symptoms

# Assessment

- Disorders of emotional expression vs. primary disorders of feelings

  - Pathological crying
    - Reflex crying, laughing after neutral stimuli
    - No congruent feelings
    - Bilateral lesions of the corticobular tracts

  - Emotionalism (11 – 35%)
    - Crying or laughing with little or no warning
    - After congruent stimuli, with congruent feelings
    - Associated with post-stroke depression

  - Catastrophic reactions
    - Disruptive emotional behaviour when confronted with unsolvable task
    - Associated with left hemisphere stroke and aphasia
    - At risk for developing post-stroke depression


1. Aybek, S., et al. The Behavioural and Cognitive Neurology of Stroke Ch 26, 2013
2. Carota, A., Paolucci, S. The Behavioural and Cognitive Neurology of Stroke, Ch 29, 2013

# Treatment

- Non-pharmacological and Adjunct Treatments
- Pharmacotherapy

# Canadian Best Practice Guidelines for Stroke Care: Psychological Management

- Patients should be given information and advice about the impact of stroke, and the opportunity to talk about the impact on their lives [Evidence Level B].
- Patients with marked anxiety should be offered psychological therapy [Evidence Level B].
- Patients and their caregivers should have their psychosocial and support needs reviewed on a regular basis as part of long-term stroke management [Evidence Level A].

# Psychotherapy for PSD

- There is inadequate evidence at present to support the use of psychotherapy as monotherapy in the treatment of PSD [Evidence Level C].
- Reasonable to consider these therapies as one of the first line treatments for depressive disorders post-stroke, given demonstrated efficacy in primary depressive disorders (Evidence Level A).
- May be used as adjunctive therapies (Evidence Level B)

# Psychotherapy for PSD

- Cochrane review: no evidence of effectiveness of psychotherapy to treat depression after stroke

- Group CBT for PSD pts and carers
  - Decreased  depression scores, maintained at 1 but not 6 months
  - Decreased carer burden, depression & anxiety scores maintained at 6 months

Hackett, Cochrane 2008
Ward, Topics in Stroke Rehab 2016

# Canadian Best Practice Guidelines for Stroke Care: Antidepressants

- **Patients diagnosed with a depressive disorder should be given a trial of antidepressant medication**, if no contraindication exists. No recommendation for use of one class of antidepressants over another; side effect profiles suggest that **selective serotonin reuptake inhibitors** may be favoured in this patient population [Evidence Level A].
- Patients with mild depressive symptoms or those diagnosed with minor depression may initially be managed by "watchful waiting"* (Evidence Level B].
- Treatment should be monitored; should continue for a **minimum of six months** if a good response is achieved [Evidence Level A].
- Routine use of **prophylactic antidepressants is not recommended** in post-stroke patients [Evidence Level A].

# Pharmacological Therapies

- Meta-analysis of antidepressants for post-stroke depression (10 studies)
  - 8 SSRIs, 2 TCAs, 1 trazodone
  - Recovery or remission of depression: OR: 2.58 (1.56 – 4.26, p=0.002)

- Cochrane
  - A small but significant effect of pharmacotherapy on treating depression and reducing depressive symptoms


1. Price, J Neurol Neurosurg Psychiatry, 2011
2. Xiao-min Xu Medicine 2015
3. Hackett, Cochrane, 2008

# Pharmacotherapy

- Both TCAs and SSRIs effective for PSD
- Relatively little comparative information on how to make the choice of one AD over another[1]

- SNRIs:
  - Duloxetine vs. Citalopram and Sertraline
  - Duloxetine more effective in reducing symptoms of depression and anxiety[2]

- Benefits vs. risks of antidepressant use need to be considered


1. Paolucci, Neuropsychiatr Dis Treat. 2008
2. Karaiskos, J Neuropsychiatry Clin Neurosci 2012

# Antidepressants for Stroke Recovery

- RCT of Fluoxetine (20 mg daily) vs. placebo for non-depressed adults with acute ischemic stroke treated for 3 months, all patients received physiotherapy[1]
  - Fluoxetine group had significant improvement in motor recovery; effect only observed at 90 days

- RCT of problem solving therapy vs. Escitalopram in prevention of depression demonstrated cognitive benefit of Escitalopram


1. Chollet, Lancet Neurol, 2011
2. Jorge, Arch Gen Psychiatry, 2010

# Antidepressants for Stroke Recovery

- Cochrane review of 52 RCTs[2]
  - Insufficient evidence to recommend routine use

- Routine use of prophylactic antidepressants is not recommended in post-stroke patients at this time [Evidence Level A]

1.Mead et al. Cochrane, 2013

# Antidepressants for Prevention of Post Stroke Depression

- No clear effect of pharmacological therapy on the prevention of depression in a Cochrane review[1]

- AD prophylaxis was associated with a significant reduction in the occurrence rate of newly developed post-stroke depression in another meta-analysis[2]


1. Hackett, Cochrane, 2008
2. Chen, Int Clin Psychopharmacol, 2007

# Psychotherapy to Prevent PSD

- Problem-solving therapy administered over 12 months (12 sessions)

- PST more effective in preventing development of depression when compared to placebo:[1]
  - HR = 2.2 (95% CI: 1.4 – 3.5, P<0.01)

- Follow-up study: PST assoc. With decrease in mortality


1. Robinson, JAMA, 2008
2. Robinson Am J Geriatr Psychiatry 2016

# Conclusions

- Depression is common following stroke and associated with significant disability
- There is limited evidence for psychotherapy in PSD at the present time
- Antidepressants are effective for PSD and anxiety symptoms, and may also provide cognitive and functional benefit for individuals without depression

# Resources

- Geriatric Psychiatry Outreach Programs
- (Providence Care)
- Providence Care – Mood Disorders
- Canadian Coalition for Seniors Mental Health
  - www.ccsmh.ca
  - Tools for Healthcare Providers → Depression
  - Guidelines, pocket card and family guide for depression

## Academic Resources


- Canadian Stroke Best Practice Recommendations: Mood, Cognition and Fatigue Following Stroke practice guidelines, update 2015; International Journal of Stroke
- Robinson, R. G., & Jorge, R. E. (2015). Post-stroke depression: a review. American Journal of Psychiatry
- Price A, Rayner L, Okon-Rocha E, et al. Antidepressants for the treatment of depression in neurological disorders: a systematic review and meta-analysis of randomised controlled trials. *J Neurol Neurosurg Psychiatry.* Vol 82.2011:914-923.

# Thank you

Maria Hussain MD FRCPC

Email: hussainm@providencecare.ca