



ADHD in Adults

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Summary 1

- ▶ Common – prevalence 2-5% in adults -persists from childhood
- ▶ Symptoms inner restlessness (not hyperactivity), impatience, sensation seeking, excessive spending (rather than impulsivity), inattention, functional impairment with underachievement and disorganisation
- ▶ Children with ADHD by age 25 only 15% retain full ADHD diagnosis and 65% meet diagnosis of ADHD in partial remission
- ▶ Diagnosed by clinical history. Self-report insufficient. Collateral history required. Neuropsychological testing helpful
- ▶ Comorbid anxiety disorder, mood disorder, personality disorder, substance misuse and neurodevelopmental conditions.

Summary 2

- ▶ ADHD diagnosis established with certainty when mood or anxiety disorder aren't active. Treat these 1st and assess effects of treatment on cognition
- ▶ Stimulant medications first-line treatment and non-stimulant medications 2nd line treatment
- ▶ Psychological therapies including CBT, metacognitive therapy, and dialectical behaviour therapy can be effective in symptom reduction in combination with medication

Adult ADHD definition and epidemiology

- ▶ Childhood neurodevelopmental disorder before age 12 persisting into adulthood symptoms are:
 - ▶ Inattention
 - ▶ Impulsivity
 - ▶ Hyperactivity
- ▶ Prevalence 2-5%
- ▶ M:F 3:2 (less skewed than in children)
- ▶ More common in separated, unemployed, disabled, not completed secondary school, obese and overweight
- ▶ Restlessness causes adults to avoid jobs that are primarily sedentary

Aetiology – Genetics

- ▶ Childhood twin studies 70% heritable – lower in adult twin studies but methodological errors
- ▶ Genes involved which are involved in dopamine and 5HT systems & some novel genes
- ▶ Large Copy Number Variants in kids with ADHD & other neurodevelopmental disorders suggesting overlap and strong genetic link
- ▶ Some genes exert effect early & others later in life

Aetiology - Environment

- ▶ Childhood adversity
- ▶ Romanian orphans in care for 6/12 rate of ADHD 2X
- ▶ Low birth weight, pregnancy and delivery complications
- ▶ Antidepressant use by mothers
 - ▶ But high rates of ADHD in kids whose mothers used before conception
 - ▶ And in mothers with psychiatric illnesses who did not use antidepressants
 - ▶ So some of the risk may be due to the psychiatric condition

Aetiology brain neurochemistry and structural changes

- ▶ Whole brain volume reduction
- ▶ Down-regulation of dopamine and noradrenaline
- ▶ Decreased volumes of frontal cortical, subcortical, caudate, corpus callosum and cerebellar structures
- ▶ Increase in volume in corpus striatum following treatment with stimulants
- ▶ PET scanning abnormal cerebral glucose metabolism in prefrontal and pre-motor areas
- ▶ SPECT hypoperfusion and hypofunction in prefrontal and striatal regions
- ▶ Genes associated with neurite outgrowth involved
- ▶ Frontal striatal and frontal cortical tracks remain abnormal
- ▶ Maturation lag by 2 to 3 years

Pathophysiology

- ▶ Hyperactivity and inattention associated with reduced inhibitory function of the prefrontal cortex
- ▶ Executive functional impairments which include reductions in vigilance, motor inhibition, organisation, problem-solving, verbal learning and non-verbal memory
- ▶ Corpus striatum (movement moderation, filtration of stimuli, linking with response from frontal lobes) malfunction leading to distractibility, emotional response to stimuli, & motivation
- ▶ Immediate response of ADHD to stimulants is secondary to activation of dopamine pathways in the corpus striatum and catecholamine dopamine activation the frontal lobes

Adult ADHD DSM 5

- ▶ 18 Symptoms
- ▶ 2 symptom domains
 - ▶ Inattention
 - ▶ Hyperactivity / impulsivity
- ▶ Examples for each criterion to help with applicability across the lifespan
- ▶ Comorbidity with autism spectrum disorder now considered
- ▶ See DSM 5

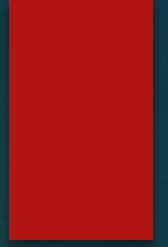
Diagnosis is a Clinical Dx

- ▶ Clinical hx – current impairment and childhood impairment
 - ▶ Patient report - insufficient
 - ▶ Parent or sibling to provide collateral hx
 - ▶ Written documentation in school reports helpful
 - ▶ If no third party report available confidence in dx is weakened
 - ▶ Time course attentional impairment relative to other psychiatric dx which one came first
 - ▶ Mood or anxiety dx “trumps” ADHD dx and should be treated first
- ▶ Medical testing for conditions affecting attention, organisation & planning – UDS, hyperthyroidism, EEG for seizures, polysomnography for sleep disorders, brain imaging for head trauma

ADHD Dx is a Clinical Dx

- ▶ Psychological Testing for patients who report cognitive problems to establish those cognitive problems
- ▶ These psychological tests may reveal abnormalities in
 - ▶ Matching familiar figures (impulsivity)
 - ▶ Verbal fluency – executive functioning
 - ▶ Continuous performance tests (sustained attention)
 - ▶ Set shifting (dividing and shifting attention)
 - ▶ Word recall (working memory)

Clinical diagnosis



- ▶ Risk factors -Strong
 - ▶ Family history of ADHD
 - ▶ Family history of autism, dyslexia and bipolar disorder
 - ▶ Male sex
- ▶ Risk factors weak
 - ▶ Low socio-economic status, dysfunction parent-child relationships, spousal separation, parental psychopathology, multiple life failures, legal violations
 - ▶ Environmental factors – low birth weight, pregnancy and delivery complications and childhood lead exposure

Clinical diagnosis

- ▶ Presence of key diagnostic factors See DSM 5
- ▶ Diagnostic tests – 1st
 - ▶ Connors adult ADHD rating
 - ▶ Brown attention deficit disorder scale
 - ▶ World health organisation ADHD self-report scale
- ▶ Diagnostic Tests – 2nd
 - ▶ UDS – drugs
 - ▶ EEG – seizure disorder
 - ▶ CT / MRI – head trauma
 - ▶ PSM – sleep disorders

DDX – Impulsivity / Attention / Hyperactivity / Cognitive Issues

- ▶ Depression / Bipolar disorder
- ▶ GAD
- ▶ Psychosis
- ▶ Specific learning disorder / Language disorder / Mental retardation
- ▶ Seizure disorder
- ▶ Traumatic Brain Injury / Age related cognitive decline
- ▶ Medication side effects / Substance abuse
- ▶ Sleep disorders
- ▶ Hypothyroidism

ADHD without concomitant mood disorder or anxiety disorder

- ▶ Trial of
 - ▶ Lisdexamphetamine or methylphenidate – first line – benefit in 2-3/7
 - ▶ Atomoxetine (norepinephrine reuptake inhibitor) second line
 - ▶ Trial should last as long as there is benefit
 - ▶ Psychological Rx CBT
 - ▶ Monitor with a symptom rating scale
 - ▶ WHO Adult ADHD rating scale
 - ▶ Adult ADHD Investigator rating scale
- ▶ Precautions
 - ▶ Cardiac hx
 - ▶ Misuse

ADHD + Mood disorder or anxiety disorder

- ▶ Treat the mood or anxiety disorder first – may lessen ADHD symptoms & use least harmful drugs first
- ▶ Also because stimulant side effects may include
 - ▶ Insomnia
 - ▶ Weight loss
 - ▶ Mania
- ▶ So what is causing what ?
- ▶ Once mood comorbidities sorted and ADHD symptoms persist then Rx ADHD. Expertise required for the polypharmacy of mood & ADHD co prescription – rapid cycling of mood disorders

Doses of Stimulant Therapy

- ▶ Methylphenidate 18 mg Extended Release mane. Increase at 18 mg increments / week to maximum of 72 mg /d
- ▶ Methylphenidate IR 5 mg mane, middi & increase 5-10 mg by weekly intervals
- ▶ Lisdexamphetamine 30-70 mg mane
- ▶ Dexamphetamine 5-60 mg /d given in 2-4 divided doses

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