Depressive disorders and ADHD

Professor Alasdair Vance
Head, Academic Child Psychiatry
Department of Paediatrics
University of Melbourne
Royal Children’s Hospital
advance@unimelb.edu.au
www.rch.org.au/acpu
Outline

1. Early onset depressive disorders: definition

2. Key risk factor of inattention for early onset depressive disorders

3. Implications for assessment and treatment
1. Diagnosis-some comments:

DSM-IV definition of a mental disorder-

a clinically significant

*behavioural or psychological* syndrome or *pattern* that occurs

in an individual

and

is associated with *present distress* or *disability* (impairment in one or more areas of functioning) or significantly increased risk of suffering, death, pain or disability or an important loss of freedom
1. Diagnosis-some comments

in children and adolescents-

clinically significant, that is developmentally inappropriate, pattern of symptoms has to be associated with clinically significant impairment in social, academic, occupational or other important areas of functioning

clinically significant impairment has to be judged relative to children of the same age, gender and IQ
1. Diagnosis-some comments

within a developmental context

symptom patterns and associated impairment in social, academic, occupational or other important areas of functioning

need to be monitored longitudinally so the clinician can accurately assess the child [1] within their current developmental phase and [2] across developmental phases as each child develops
1. Diagnosis-some comments

multi-informant report: category and dimension

parent, teacher, child

low agreement rate repeatedly shown

varies between externalising and internalising disorders
externalising: parent-teacher: increased agreement
internalising: child-teacher: increased agreement
1. Diagnosis- some comments

A dimensional description of symptoms used to make a diagnosis can provide additional evidence that the symptoms are indeed in the clinical range.

Normally distributed dimension:

- Mean, median, mode-equal
- Within 1 standard deviation: 68% values lie
- Within 1.5 standard deviations: 81.8% values
- Within 2 standard deviations: 95.5% values lie
- Within 3 standard deviations: 99.7% values lie
Figure 4.1  Problem level categories for children and adolescents as rated on the Total Problems Scale of the Child Behaviour Checklist

- 50% low
- 25% moderate
- 15% high
- 10% very high

Increasing Number of Emotional and Behavioural Problems
1. Diagnosis – some comments

characteristics of individuals and groups of individuals at the extremes of a normal distribution essentially differ from those individuals that lie closer to the mean brain behaves differently environment behave differently
Major depressive disorder – one or more major depressive episode(s) characterized by the following:

**period of two weeks or more**

-depressed and/or irritable mood predominant and/or
-loss of interest or pleasure
-3 or 4 or more of the following;
  -feelings of worthlessness or excessive or inappropriate guilt,
  ->5% weight change in a given month, in/hyper somnia, psychomotor agitation/retardation, anergia (fatigue),
  **decreased concentration or ability to think or decisiveness**, recurrent thoughts of death, suicidal ideation, suicide plan or suicide attempt
-symptoms cause impairment in interpersonal, social, academic, occupational functioning
-not due to a substance, medical condition or bereavement
Dysthymic disorder is characterized by the following:

1. year or more (most of the day, for more days than not),
2. <2 months absence in a given year
3. depressed and/or irritable mood predominant
4. 2 or more of the following:
   - feelings of hopelessness, low self-esteem
   - appetite change, in/hyper somnia, anergia (fatigue),
   - decreased concentration or decisiveness
5. no major depressive episode evident in first year of the symptoms
6. symptoms cause impairment in interpersonal, social, academic, occupational functioning
7. not due to a substance, medical condition or bereavement
approximately 2/3 DD → MDD

additive effect of ‘double’ depressive disorder on morbidity and treatment non-responsiveness

relates to known ‘biological’ and ‘environmental’ factors
Comorbidity within a developmental context
-some comments

Common comorbid disorders with early onset depressive disorders

oppositional defiant disorder/conduct disorder
ADHD
anxiety disorders
learning disorders (language-based/visuo-spatial)
developmental coordination disorder
speech/language disorders
Standard multiple regression of ADHD-CT, dysthymic and anxiety disorder symptoms on the CBCL-externalising subscale in primary school age children with ADHD-CT (N=183)

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>β</th>
<th>sr²</th>
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<tbody>
<tr>
<td>ADHD-CT sx</td>
<td>.87*</td>
<td>.51</td>
<td>.20</td>
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<tr>
<td>Dysthymic d sx</td>
<td>1.11*</td>
<td>.35</td>
<td>.08</td>
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<tr>
<td>Anxiety d sx</td>
<td>-.22</td>
<td>-.08</td>
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*p<.0005

R² = .51
Adjusted R² = .50
Comorbidity within a developmental context
-some comments

Common clinical presentations
arguing back, negativistic child
inattentive child
anxious, shy, ‘shut down’ child
school refusing child
experimenting, ‘high risk’ behaviours
"All right, Billy, you just go right ahead! . . . I've warned you enough times about playing under the anvil tree!"
Some current clinical research

Spatial memory: encoding and retrieval aspects

Spatial working memory: ‘holding in mind’ and manipulation aspects

Relatively human language-free / experimenter bias free

Well described brain behaviour relationships
Spatial memory: simultaneous and delayed
Delayed Matching To Sample (DMTS) (mean correct responses) at simultaneous and three delay conditions across the three groups, covarying for age.

Level of delay (simultaneous, 0, 4, 12 seconds)
[a] $F(4, 144)=2.55, \ p=.04$
[b] MDD > controls / DD, Cohen’s d = .68 / 60
Spatial working memory (manipulate)
Spatial working memory (manipulate)
Between Search Errors (BSE) (mean) at each level of difficulty across the three groups, covarying for age.

Level of difficulty (number of boxes)

[a] $F(2,74)=4.00$, $p=.02$, partial $\eta^2 = .10$
[b] DD > controls/MDD, Cohen’s $d = .82 / .60$
Total Between-Search-Errors (BSE)

Controls > ADHD = ADHD and DD = DD
Greater Activation for Control than Dysthymic Disorder

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<tr>
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N=14, CBCL inattention subscale T score: 70.88 (9.75)

Prof. A. Vance
Greater activation for Control than ADHD group.

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<th>BA</th>
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<tr>
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<td>Right Cuneus</td>
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Greater activation for ADHD than Control group.

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<td>L Mid Temporal Gyr.</td>
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<td>-48</td>
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N=14, CBCL inattention subscale T score: 72.23 (10.72)
Region of activation | BA | C (mm) | Z
---|---|---|---
Control Group greater than ADHD-CT Group
Parieto-Occipital
R Precuneus | 19 | 24 -70 32 | 3.53
R Cuneus | 19 | 32 -90 28 | 2.82
Posterior Parietal
R Inf. Parietal | 40 | 36 -40 50 | 2.82
Frontal/Subcortical
R Caudate Nucleus, Body | 18 -12 22 | 2.82

N=24, CBCL inattention subscale T score: 72.14 (9.43)

Vance et al, Mol Psych 2007
In summary

major depressive disorder

better memory retrieval, independent of encoding processes, compared to dysthymic disorder and healthy control participants
In summary

dysthymic disorder

spatial working memory deficits compared to MDD and controls
Dysthymic disorder: frontal-striatal-parietal dysfunction

Major depressive disorder: frontal-temporal dysfunction
Recently

‘pure’ Dysthymic disorder: strategy dysfunction (BA 9,46)

when ADHD, inattentive type symptoms removed
Future directions conjecture!

Dysthymic disorder: predominantly environmentally mediated dysfunction (reversible?)

Major depressive disorder: ‘limbic’ dysfunction, driving a normally functioning frontal-temporal system harder
The two main components of the epigenetic code

**DNA methylation**
Methyl marks added to certain DNA bases repress gene activity.

**Histone modification**
A combination of different molecules can attach to the 'tails' of proteins called histones. These alter the activity of the DNA wrapped around them.
Key psychosocial risk factors

- parental psychopathology: alcohol/depressive/anxiety ds
- marital functioning:
- family functioning:
- peer group functioning:

“empathy/attunement/sensitivity/responsiveness”

“flexibility/adaptiveness/regulation of affect/problem solving”

sociocultural context affects the character of these aspects and their detection
Treatment approach

- Aim is always to maximize learning in home, classroom and playground environments

  through maximizing resilience and minimizing risk factors

- psychosocial treatments focussed on psychosocial factors

- medication treatment focussed on biological factors in order to facilitate each child’s involvement in the psychosocial treatments
"Well, well, King... looks like the new neighbors have brought a friend for you, too."
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