Eur Child Adolesc Psychiatry (2013) 22 (Suppl 1):S49–S54
DOI 10.1007/s00787-012-0361-y

REVIEW

Conduct disorders

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Published online: 6 December 2012

Abstract Conduct disorder (CD) is a frequently occurring psychiatric disorder characterized by a persistent pattern of aggressive and non-aggressive rule breaking antisocial behaviours that lead to considerable burden for the patients themselves, their family and society. This review paper updates diagnostic and therapeutic approaches to CD in the light of the forthcoming DSM-5 definition. The diagnostic criteria for CD will remain unchanged in DSM-5, but the introduction of a specifier of CD with a callous-unemotional (CU) presentation is new. Linked to this, we discuss the pros and cons of various other ways to subtype aggression/CD symptoms. Existing guidelines for CD are, with few exceptions, already of a relatively older date and emphasize that clinical assessment should be systematic and comprehensive and based on a multi-informant approach. Non-medical psychosocial interventions are recommended as the first option for the treatment of CD. There is a role for medication in the treatment of comorbid syndromes and/or in case of insufficient response to psychosocial interventions and severe and dangerous aggressive and violent behaviours.

Keywords Conduct disorder · Aggression · Callous-unemotional · Classification · Guidelines · Subtyping antisocial behaviour · Medication · Interventions · Dsm-5

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Introduction

Aggression is part of human nature, for better or worse. The ability to defend oneself against verbal or physical attacks contributes to survival and adaptation. Aggressive behaviours such as hitting, pushing, slapping, biting, kicking, spitting and hair pulling are rather universal in young children [38]. Growing older, most children tend to socialize and learn to inhibit these aggressive behaviours. Interactions with caregivers play an important role in shaping children's behavioural repertoire towards more socially acceptable forms of defending one's rights and goods and expressing one's wishes. Some children, however, fail to follow this path of socialization and continue frequently manifesting aggressive and rule-breaking behaviours. These children may fall within the categories of psychiatric disruptive behaviour disorder, the most severe of which is conduct disorder (CD).

The essential features of CD are a repetitive and persistent pattern of behaviour through which the basic rights of others and major age-appropriate societal norms or rules are violated [2]. In many cases, CD is preceded by and comorbid with oppositional defiant disorder (ODD). The essential features of ODD are a recurrent pattern of

negativistic, defiant, disobedient and hostile behaviour towards authority figures (a defiant headstrong symptom cluster) and temper tantrums and irritability (a more affective symptom cluster) [2]. Problems of aggression, oppositionality and impulsivity, with or without attention deficit or hyperactivity, constitute the most prevalent psychopathology in children and adolescents and are amongst the most common reasons for referral to mental health services, accounting for over 70 % of prepubertal and about 50 % of postpubertal referrals to clinics [3].

Conduct disorder in DSM-5

As in the DSM-IV-TR (APA 2000), in the DSM-5, CD will be defined on the basis of the presence of three of 15 criteria that should have been present in the last 12 months, and of which one must have been present in the past 6 months. These 15 behavioural criteria can be categorized into four generalized behavioural subtypes: (1) aggression to people and animals, (2) destruction of property, (3) deceitfulness or theft and (4) serious violations of rules. These 15 criteria are identical to the criteria of DSM-IV-TR. A further requirement is that the disturbance in behaviour causes clinically significant impairment in social, academic or occupational functioning.

Developmental subtypes

DSM-5 will keep the distinction between childhood-onset and adolescent-onset subtypes of CD. The differentiating characteristic is the presence of just one symptom of CD prior to age 10. This distinction builds on Moffitt's classic review paper [27] showing that many individuals only present with antisocial behaviour during adolescence and that the prevalence of early onset conduct problems is relatively low compared to late-onset conduct problems. Later research indicates that childhood-onset behaviour and adolescent-onset antisocial behaviour have different correlates (for review see [13]). Childhood-onset antisocial behaviour, also then called lifetime persistent antisocial behaviour, was found to be associated with a strong persistence into adulthood, with early family dysfunction and family instability, temperamental and cognitive problems, and with a modest degree of genetic vulnerability. In contrast, adolescent-onset antisocial behaviour has much weaker associations with negative family factors and temperamental and cognitive problems, is more often bound to adolescence, has lower genetic risk factors and is typically due to negative forms of social learning in the peer group [13].

Recent studies, however, seriously questioned that child-onset and adolescent-onset aggression are qualitatively different. Taxometric analyses on parent-rated behaviour problems of 2,175 subjects led to the conclusion that the latent structure of life-course persistent and adolescent-onset antisocial behaviour is dimensional in nature [42]. In other words, these two forms of antisocial behaviour differ in degree rather than in kind. Further, structural and functional MRI studies did show that the neural correlates of these two developmental subtypes of CD were more similar than different [10, 30, 31]. Prospective longitudinal MRI studies to be started in childhood age are needed to more fully examine the neural correlates of the developmental subtypes of CD and improve our understanding of the validity of this distinction. When differences in neural underpinnings of the developmental subtypes are few, research should focus more on environmental risk factors that influence the expression of the CD phenotype at early age.

Callous-unemotional specifier

What is new in DSM5 is the specifier of CD with a callous-unemotional (CU) presentation (http://www.dsm5.org) [36]. To qualify for this specifier, a child must have displayed at least two of the four CU symptoms persistently over at least 12 months and in multiple relationships and settings. The CU symptoms should be assessed from multiple sources of information, including self-report and reports from significant others who have been able to observe the child's behaviour for an extended period of time (parents or other family members, teachers, peers). The four CU symptoms are (http://www.dsm5.org)

1. Lack of remorse or guilt: Does not feel bad or guilty when he/she does something wrong (exclude remorse when expressed only when caught and/or facing punishment). The individual shows a general lack of concern about the negative consequences of his or her actions.
2. Callous-Lack of empathy: Disregards and is unconcerned about the feelings of others. The individual is described as cold and uncaring. The person appears more concerned about the effects of his or her actions on him or herself, rather than their effects on others, even when they result in substantial harm to others.
3. Unconcerned about performance: Does not show concern about poor/problematic performance at school, work or in other important activities. The individual does not put forth the effort necessary to perform well, even when expectations are clear, and typically blames others for his or her poor performance.
4. Shallow or deficient affect: Does not express feelings or show emotions to others, except in ways that seem shallow, insincere or superficial or when emotional

expressions are used for gain (e.g. emotions displayed to manipulate or intimidate others).

The subtyping according to CU traits is based on many reports that CU traits are relatively stable across childhood and adolescence, tend to be associated with more severe conduct problems, delinquency or aggression [11] and with higher heritability estimates than low CU antisocial behaviour [39, 40]. Children and adolescents with CD with and without CU traits differ in their emotional, cognitive and personality characteristics. CU traits tend to be positively correlated with measures of fearless or thrill-seeking behaviours and negatively correlated with measures of trait anxiety or neuroticism and with sensitivity to punishment cues [12, 29]). Furthermore, response to behavioural treatment seems to be poor [14, 37]. Epidemiological studies indicate that 2.9 % of the paediatric population has high CU traits, whilst only less than one-third of these (thus <1 % of the population) also meet the criteria for CD [34]. Thus, CU traits appear to be more broadly present outside the CD diagnosis, and further studies are needed into the clinical consequences of having high CU traits outside a CD diagnosis [16]. Also, more research is needed on the consequences of having high, intermediate and low levels of CU traits amongst children who meet criteria for CD [23].

The impact of guidelines

Available guidelines and practice parameters on CD are mostly of an older date and deal primarily with the assessment and treatment of CD [1, 21, 41]. The National Institute for Clinical Excellence (NICE) in the UK will release a new and comprehensive guideline on the recognition, intervention and management of conduct disorders and antisocial behaviours in children and young people in April 2013. The National Institute for Clinical Excellence guidelines are available for parent management treatment of children with CD up to 12 years and for family treatment of CD (released 2007 and 2011, respectively, see http://www.nice.org.uk).

Assessment

As with all other psychiatric disorders, the approach to clinical assessment should be systematic and comprehensive. This includes a multi-informant approach by collecting information from parents/caregivers, teachers and from the patient self and will involve a careful history taking and a psychiatric interview and observation. By definition, some of the symptoms of CD are covert and of low frequency and may be unnoticed or concealed and thereby easily underreported. Active probing for each of the DSM symptoms of CD is required, both when interviewing the patient and other informants. Many clinicians may tend to underdiagnose CD for fear of stigma and trying to avoid conferring a diagnosis with a poor prognosis. Instead, they may prefer to diagnose ODD instead. Assessment should further address important issues regarding the presence of comorbid disorders including ADHD, anxiety and mood disorders, learning difficulties (particularly verbal learning problems) and substance use disorders in adolescence. All structured psychiatric interview schedules (i.e. K-SADS, CAPA, DISC, DICA, DAWBA) have well-organized sections for the assessment of CD that of course need to be updated with the CU symptoms of the DSM-5. Pragmatic and budget reasons will normally limit the use of these interviews foremost to research projects.

Rating scales Assessment of CD symptoms can be facilitated using broadband (Achenbach scales CBCL, TRF, YSF; SDQ scales; Conners scales) and several specific aggression scales. CU traits can be reliably measured by the Inventory of Callous-Unemotional Traits (ICU) [12]. Distinctions between reactive and instrumental types of aggression can be made by both teacher rating scales [8] and parent rating scales [20].

Treatment

General approach

To be effective, treatment must be multi-modal, involve a family-based and social systems-based approach, address multiple foci and continue over extensive periods of time. Treatment should start with informing the patient and his parents/caretakers about the disorder and its potential complications and long-term sequelae. Emergent psychosocial crises must be dealt with through family support, problem solving and outreaching activities. Treatment strategies should be targeted to identified comorbid disorders, such as ADHD. Pharmacotherapy is usually not the first line of treatment, but should be considered in those patients who have failed to respond to other interventions and/or show escalating levels of dangerous aggression and violent behaviour. Some have suggested that pharmacotherapy may be more effective when administered in combination with psychosocial/behavioural treatments than when given alone [19].

Psychological interventions

The available treatment guidelines and practice parameters recommend non-medical psychosocial interventions as the first option for the treatment of CD [1, 18]. Psychosocial

treatments emphasize parent management training (PMT) and individual skill-building approaches. Parent management training teaches consistent parenting, positive and less harsh discipline practices, monitoring of the child and positive feedback for the child. Parent management training programmes are effective in decreasing aggressive, oppositional and non-compliant behaviour, but parental psychopathology, work stress and lack of motivation preclude parent participation in treatment. Skills training approaches focus on social skills, problem-solving techniques and anger management strategies in reducing symptoms of CD.

In addition, several multi-focussed psychosocial treatment programmes have been developed that combine PMT, structural family therapies and skill-building in one programme. The overall effect size of these programmes in reducing aggression/symptoms of CD ranges from 0.4 to 0.9 [7]. Multisystemic Therapy, Functional Family Therapy and Multidimensional Treatment Foster Care are programmes developed for the treatment of older children and adolescents with aggression necessitating juvenile justice involvement [7, 15]. These programmes have shown effectiveness in the treatment of aggressive and violent adolescents, resulting in decreased arrest rates [4, 9, 15].

All these psychosocial treatment approaches, however, have serious limitations. The effect size of PMT declines with increasing age with strong evidence for efficacy limited to younger children (up to around 8 years of age). Further, after therapy has been completed, the generalization of treatment benefits is low. Dropout rates are high, and parental psychopathology and lack of motivation of parents are serious obstacles in administering these interventions. Finally, these psychosocial treatments appear to bring greater benefits to children with high levels of impulsive aggression, whereas children with high levels of CU traits tend to be rather unresponsive to these interventions.

Medical interventions

Psychostimulants are used to treat aggression in the context of CD as a comorbid condition of ADHD. The efficacy of stimulants for the reduction of aggression is derived from clinical trials in ADHD that measured aggression as a secondary outcome variable. Meta-analyses indicate that stimulants exert a medium to large effect on aggression/symptoms of CD (mean effect size between 0.78 and 0.84) [6, 24, 28]. Low doses of typical antipsychotics are effective for managing aggressive symptoms in children and adolescents [5, 43], however at the cost of producing worrisome side effects, and they may not be optimal for the treatment of aggression. Mood stabilizers can also reduce aggression associated with CD. Meta-analysis of six randomized controlled trials (RCTs) (5 lithium, 1 carbamazepine) found a moderate effect size (0.4) of mood stabilizers in reducing aggressive symptoms [28]. Clinicians are often deterred from using lithium in children and adolescents due to the need for frequent blood sampling for the purpose of dose monitoring and a perceived association with adverse effects [25]. Alpha-2 agonists were shown to reduce symptoms of aggression in two recent RCTs (1 clonidine, 1 guanfacine) with an effect size of 0.5 [17, 35].

Amongst the second generation antipsychotics, risperidone is the most extensively studied medication for the treatment of aggression and CD in children and adolescents. A meta-analysis of 9 RCTs of the effect of risperidone in reducing symptoms of aggression included 875 subjects (81.1 % male; mean age = 9.2 years) and reported a large effect size of 0.9 [28]. In Europe, risperidone has been approved for the short-term treatment (6 weeks) of aggression in CD in children and adolescents with subaverage intellectual functioning or mental retardation (details in: http://www.medicines.org.uk/emc/medicine/12818). PERS (Pharmacogical European Risperidone Studies) is a consortium funded by the European Union 7th framework programme that has started a series of non-commercial randomized controlled and observational studies to examine the short- and long-term efficacy and safety of risperidone in the treatment of CD in children and adolescents with normal intelligence (http://www.pers.com). The goal of PERS is to collect sufficient data to obtain a paediatric-use marketing authorisation (PUMA) for the use of risperidone in this indication (Glennon et al., submitted).

Comment

Conduct disorder is a matter of significant public health and societal concern because of the significant burden for the patient, family and immediate environment and the strong associations with adverse scholastic and work performance, disrupted peer and family relationships, excessive risk-taking behaviours and addictive behaviours [22, 26, 32]. Compared to other psychiatric disorders with onset in childhood such as ADHD and ASD, CD has been relatively less studied. The economic costs of aggressive and antisocial behaviour in children and adolescents are huge, with the estimated mean annual total cost being 7,500 Euro per patient [33].

Delivering new approaches to diagnosis, prevention and treatment will alleviate substantially the burden for patients, family and society and also have an impact on broader issues such as feeling safe in public places and society in general. Effective strategies for prevention and treatment of CD will be a cost-effective way to reduce the public health burden of aggressive and antisocial

behaviour. The availability of neurobiologically valid ways to subtype aggression would provide new input to developing these new approaches to diagnosis, prevention and treatment. One of the greatest challenges is to develop, test and implement innovative effective treatments for CD children with high levels of CU traits. These might include studies not only with medication (e.g. oxytocin), but also non-pharma approaches with neurofeedback or direct transcranial magnetic stimulation.

Conflict of interest Jan K Buitelaar has in the past 3 years been a consultant to/member of the advisory board of and/or a speaker for Janssen Cilag BV, Eli Lilly, Bristol-Myer Squibb, Shering Plough, UCB, Shire, and Novartis and Servier. He is not an employee of any of these companies and is not a stock shareholder of any of these companies. He has no other financial or material support, including expert testimony, patents and royalties. This article is part of the supplement "The Future of Child and Adolescent Psychiatry and Psychology: The Impact of DSM 5 and of Guidelines for Assessment and Treatment". This supplement was not sponsored by outside commercial interests.

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