Aetiology and Pathogenesis

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Contents

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Learning Objectives

- To understand the biological, psychological and social risk factors for the development of mental illness in individuals with an intellectual disability
- To understand how the diagnosis of mental illness in people with intellectual disability can be overshadowed, especially when there are comorbid conditions such as autism, ADHD, epilepsy and cerebral palsy

10.1 Introduction

Intellectual disability (ID) is defined as a developmental condition that affects both intellectual and adaptive functioning in conceptual, practical and social domains [1]. ID affects approximately 1% of the population [2]. ID is often classified into mild, moderate, severe and profound based largely on the results of IQ testing, with corresponding differences in life skills and the need for support. The majority of people with an ID have a mild ID [1]. There are multi-faceted explanations for ID and autism, from medical to cultural and spiritual. The cause of mild ID is most often unknown. Conversely, there is often a demonstrable cause for moderate to severe ID [3], for example, a chromosomal abnormality or perinatal complication [4]. It is expected that with increased uptake of genetic testing and increased resolution of genetic testing, previously unknown causes will be shown to have a genetic basis.

Language of the disorder has changed over the last 50 years, from mental retardation to learning disability and now increasingly intellectual disability, reflecting a change in wider societal attitudes towards, and understanding of, ID. In the relatively recent past, people labelled with 'mental retardation' were housed in institutions and were not believed to have the capacity to develop mental illness. Our knowledge and conceptualisation of ID and psychiatric illness is ever expanding. People with ID are not a homogenous group and an individual's risk of mental illness will vary based on constitutional and environmental factors. The reported prevalence of mental illness in people with ID differs owing to different methods of sampling and case ascertainment. The recognition and diagnosis of mental illness in people with ID can be complicated by atypical presentations and communication limitations. It is now understood that people with ID across the lifespan are at least as likely to experience mental health conditions as the general population [5–7], with certain groups being at particular risk [6, 7]. People with more severe ID or with lower ability levels have been found to have an even higher prevalence of mental ill health [6]. In addition, challenging behaviours that are unrelated to mental illness are present in a significant proportion of individuals with ID [8]. The impact of these behaviours can be significant, for example, increasing the need for costly support packages, potential exclusion from social activities and substantial caregiver burden.

The aim of this chapter is to discuss the factors that contribute to the development and maintenance of mental illness in ID and their interplay. We have followed a conventional bio-psycho-social approach.

10.2 Biological Factors

There are a plethora of biological risk factors for the development of a mental illness in an individual with ID, ranging from genetic predisposition to complications that occur in utero or around the time of birth. Significant perinatal complications which have led to an admission to a special baby care unit or neonatal intensive care have been implicated in the aetiology of ID [9]. Pregnancy and birth complications, as well as sometimes being a cause of ID, have also been associated with later development of mental illness, particularly schizophrenia, in people with ID [10].

As with the general population, certain mental illnesses can occur in multiple members of one family due to shared genetic and environmental risk factors [11]. A number of genetic syndromes are associated with ID, physical and mental illness, for example, Down syndrome. Chronic physical illness in itself can predispose an individual to certain

mental health conditions such as depression or anxiety [12]. For example, a meta-analysis performed by Anderson et al. [13] showed that the presence of diabetes doubled the odds of comorbid depression. In addition, certain physical health conditions can be mistaken for mental illness. For example, individuals with Down syndrome are at greater risk of developing thyroid disease [14] which can mimic affective disorder. This underscores the importance of accurate history taking and physical examination with appropriate investigations in people with Down syndrome.

Advances in genetic research have spawned interest in behavioural phenotypes, which are a particular cluster of cognitive, linguistic and behavioural profiles associated with specific genetic syndromes [15]. In addition, several genetic conditions are associated with specific mental illnesses. This information can allow us to predict and closely monitor for the development of particular psychiatric illnesses [15], although the nature of the link is not always clear (i.e. the mechanisms from genotype to phenotype have not been well defined). Examples of well-known associations are as follows:

1. *Prader-Willi syndrome (PWS) and psychotic disorder:* The most striking feature of PWS is insatiable appetite and food-seeking behaviour; individuals with the disorder may also have increased propensity to develop psychotic disorder. The additional risk seems to be confined to those with maternal uniparental disomy (accounting for approximately 25% [16] of cases) and the onset of the psychotic symptoms is in early adult life [17].
2. *Velo-cardio-facial (DiGeorge) syndrome and schizophrenia:* Associated features of velo-cardio-facial syndrome include palatal anomalies, cardiac anomalies and dysmorphic facial features. Psychotic disorders (most commonly schizophrenia and schizoaffective disorders) are far more common in children, adolescents and young adults than in populations without velo-cardio-facial syndrome that have been matched for IQ [18]. Schizophreniform disorders develop in up to 41% [19] of people with the syndrome.
3. *Down syndrome (DS)/trisomy 21 and Alzheimer's dementia (AD):* In addition to characteristic facial features, people with DS have associated physical health conditions such as cardiac defects, increased risk for leukaemia, autoimmune disorders, and by 50 years old, up to 55% [20] of those with DS have clinical features of dementia. Evidence suggests common pathogenic pathways between DS and AD, including the over-expression of the Amyloid Precursor Protein (APP) gene coded for on chromosome 21 which is important in the neurodevelopment of AD [21].
4. *Williams syndrome (WS) and anxiety:* Individuals with WS are known to appear as being hyper-social, outgoing and friendly. Despite this, they experience greater levels of anxiety than both individuals without ID and those with ID due to another cause [22] (■ Table 10.1).

In addition to our current understanding of genetic syndromes and their specific behavioural phenotypes, developments in molecular genetics have made it possible to study rare chromosomal copy-number variations (CNVs). CNVs have been implicated in the development of a broad range of complex conditions including ID, severe mental illness and autism [23]. As the resolution of genetic testing improves, it should one day be possible to test for CNVs in routine clinical practice leading to further discoveries. Wolfe et al. [23] found that up to 11% of new genetic diagnosis could be uncovered if chromosome microarray analysis was performed routinely. This is still a new and expanding field but with further research, geneticists should be able to uncover new genetic diagnoses with characteristic psychiatric phenotypes with potential implications for management. Overlap in the genetic risk markers (CNVs) for classically neurodevelopmental disorders (including Attention-Deficit/Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD) and ID) and those that had previously been considered neurodegenerative disorders (namely adult-onset schizophrenia and bipolar affective disorder) challenge existing psychiatric nosology and suggest shared pathways

Table 10.1 Examples of different syndromes with associated symptoms/behavioural phenotypes and associated psychiatric illness

Genetic syndrome	Psychiatric symptoms and behavioural phenotypes associated with syndrome	Psychiatric illness associated with syndrome
Prader-Willi syndrome – Chromosome 15 abnormality (paternal deletion, maternal uniparental disomy or imprinting defect)	Hyperphagia, skin picking, temper tantrums, aggression, hoarding, obsessional traits Sleep disturbance Stubbornness	Affective disorders often with psychosis Obsessive-Compulsive Disorder
Velo-cardio-facial (DiGeorge) syndrome – Deletion of genetic material from chromosome 22	Shy, withdrawn Problems in social relationships Concrete thinking Mood fluctuations	Schizophrenia spectrum disorders ADHD
Down syndrome – trisomy 21	Self-talk Particular deficits in working memory Sociable nature Age-related cognitive decline Aggression Stubbornness	Alzheimer's type dementia, atypical psychotic features, Obsessive-Compulsive Disorder, anxiety Depression
Williams syndrome – deletion of genetic material from chromosome 7	Autistic traits Overly friendly/gregarious Loquacious/'cocktail party speech' Hyperactivity	Generalised and social anxiety disorder Phobias/fears Obsessive-Compulsive Disorder

and the development of what had previously been considered discrete disorders [24]. How and why the same genetic variation is expressed differently remains undetermined but is an exciting area of research [11, 24, 25].

The development of mental illness in a person with ID is multi-factorial. Despite DNA sequencing technology being available and evidence of a strong inherited component to many psychiatric diagnosis, researchers have not been able to find clear genetic causes for most of these conditions [26]. Research into the way in which our environment can influence the development of mental illness and modulate the expression of genetic predisposition to disorders is helping us to gain new insights into the aetiology of mental illness in those with and without ID. Epigenetics describes the modification of gene expression (epigenome) that arises without altering the genetic code due to non-genetic influences, such as physical or emotional events [27]. Epigenetic mechanisms of gene regulation are composed of a complex, interconnected and plastic network comprising DNA methylation, post-translational modification of histones and non-coding RNAs [28]. Recent research on transcriptional activity at the molecular level has identified higher-order layers of regulation, including three-dimensional chromosome organisation, chromatin accessibility and RNA epigenetic modifications (epitranscriptome) [29–31]. Depending on the immediacy between an individual's life and the occurrence of changes in his/her epigenome, two main types of epigenetics are distinguished, *direct* and *indirect*. *Direct* epigenetics refers to changes that occur in the lifespan of an individual, due to direct experiences with his environment, while *indirect* epigenetics concerns changes that occur inside of the womb, due to events during gestation, or changes that affect the individual's predecessors, due to events that occur even long before conception and that are transmitted across generations [32–34]. Intrauterine epigenetic changes, called *foetal programming* (or *re-programming* in reference to the very

first weeks after conception), are hypothesised to constitute the most numerous and most important epigenetic changes for an individual's life and to represent a form of adaptive response to environmental stimuli, as to prepare an organism to tolerate negative external factors that may be encountered after birth [32, 35–38]. Intrauterine epigenetic changes can mark germinal cells and be transmitted to the offspring (imprinted genes) [35]. If, however, offspring's environmental conditions are markedly different than predecessors' ones, the offspring would be epigenetically mismatched and have a phenotype not appropriate for that environment. This could explain why highly stressful life circumstances or certain compounds such as alcohol or environmental toxicants, which profoundly alter the epigenetic make-up, could exert undesirable transgenerational effects and determine vulnerability to neurodevelopmental and psychiatric disorders [32, 39]. Likewise, the alteration of partial (alleles from both parents are differently expressed) and complete (complete suppression of one parent's allele) genomic imprinting of certain genes seem to influence the physiology of neural circuits and affect mental functioning and behavioural phenotypes [40].

Also foetal programming has been shown to link maternal pregnancy stress, exposure to toxic substances and viral infections with brain development and emotional reactivity of the offspring [35, 37, 41–43].

However, the epigenetic load accumulated over the course of an individual's lifetime might also bring risk factors for disease, as some direct epigenetic changes have been associated with predisposition to psychiatric disorders [26, 44–47]. The epigenetic relationship between stressful early life adversity and anxiety and depressive disorders has been extensively studied, with particular regard to the brain-derived neurotrophic factor (BDNF), hypothalamic–pituitary–adrenal (HPA) axis, serotonin transporter and FKBP5 (a critical regulator of the HPA cortisol response) genes [48]. Interestingly, variants in genes encoding for epigenetic modifiers have also been reported on [49].

In the last decades, the availability of high-throughput technologies has facilitated the generation of vast amounts of public epigenome-wide datasets that enable less biased and more integrative views on how the epigenetic regulation works in health and disease. The hope is that once we understand more about the interaction between genetics and psycho-social risk factors in influencing the susceptibility of mental illness, we will be able to think about new options for prevention and treatment of mental illness [50].

Several genetic syndromes show particular behavioural, cognitive and linguistic profiles related to specific mental illnesses. Epigenetics modification has also been associated with predisposition to psychiatric disorders, in both direct (during the person's life span) and indirect (during gestation or before the conception and transmitted across generations) ways. Epigenetic foetal programming links maternal pregnancy stress, exposure to toxic substances and viral infections with brain development and emotional reactivity of the offspring. Perinatal complications, chronic physical illnesses, sensory impairments, comorbidities and related medication can also contribute to mental health problems.

10.3 Psychological Factors

Vulnerability to the development of mental illness could be related to an individual's early life experiences and relationships. Attachment theory describes the notion that human beings are motivated to seek proximity to 'attachment figures', typically the primary caregiver [51]. An inconsistent and insecure relationship with such a figure could lead to the development of emotional problems and in some cases mental disorders due to reduced resilience in coping with stressful life events [52]. This theory has been influential in shaping our understanding regarding the psychological factors leading to the possible development of a mental illness, but research into

how the attachment theory could affect the mental health of people with ID has been relatively limited. The available research suggests that although attachment behaviours are generally similar to those without ID, they may be delayed or blunted in people with ID [53]. Another hypothesis is that the ID in itself could be experienced as a trauma, for both the parents at diagnosis and the child when they become cognitively aware of their diagnosis, and therefore affects the bond between a child and their attachment figure [54]. Reactive attachment disorder symptoms (unusual social behaviours including being withdrawn, disinhibited or overfriendly) has been found to be present in individuals with ID that suffered early childhood adversity, although symptoms seem to diminish with age [55].

The diathesis-stress model proposed by Abramson and colleagues [56] outlines the concept that psychological distress or the development of mental illness arises from the interaction between pre-existing (genetic) vulnerability to mental illness and stressful life events. Studies have supported the theory that stress is associated with the development of depressed mood in both the general and ID populations [57].

Individuals with ID are more likely to experience adverse life events such as stigma and discrimination, social exclusion, reduced employment and vocational opportunities and poverty [58]. Individuals with ID are also more likely to experience all types of abuse due to their vulnerability. A review of the limited available evidence into adverse life events in people with ID, performed by Martorell and colleagues [59], highlighted the importance of understanding and identifying the role of life events and traumatic experiences as predictors of psychopathology in people with ID. Adverse life events and psychosocial disadvantage have been linked to the development of psychiatric morbidity in young people and adults with ID [60]. Ali and colleagues [61] showed that higher rates of self-reported stigma were associated with higher psychological distress and service use. People that have experienced adverse life events may later go onto develop difficulties with processing their emotions which can manifest as interpersonal difficulties, presenting in some cases as emotionally unstable personality disorder or depression [62, 63]. Certain experiences which may not seem particularly traumatic to the general population could induce a post-traumatic reaction in a person with ID. For example, moving home may be experienced as a traumatic event for a person with ID as they may have no control over any aspect of the move and no choice about where they move to or who they will be living with. These experiences may be expressed in individuals with ID by an apparent increase in 'challenging behaviour' which in a person without an ID would be interpreted as anger or avoidance associated with Post-Traumatic Stress Disorder (PTSD) [59].

People with ID, specifically those with moderate ID [64], often feel that they have been discriminated against due to their ID. Ali and colleagues [65] described how this can result in barriers to accessing health care for several reasons, including poor communication. For example, a person can feel discriminated against if their health practitioner does not modify their communication in accordance with their needs, making it impossible for them to understand the salient points of the consultation [66]. Such discrimination can lead to feeling stigmatised, which impacts negatively on an individual with ID psychological wellbeing and can cause psychological distress [66].

The persistent exposure to uncontrollable, stressful situations can contribute to 'learned helplessness', that is, that a person 'learns' that he/she is helpless in many situations and does not attempt to try and change them, even when change is possible [67]. Learned helplessness can increase a person's risk of depression [68]. Although this can be a universal condition, those with ID are much more vulnerable [69, 70] since the tendency to overestimate their performance due to a lack of ability to recognise their deficits, difficulty in connecting their performance to internal causes (external locus of control[1]) and effectively judging their ability, and difficulty in

1 A belief that life is controlled by outside factors which the person cannot influence.

identifying the cognitive exhaustion state symptoms [69, 71].

Another vulnerability factor, conceptually associated and partially overlapped to external locus of control and learned helplessness, is represented by low environmental mastery. Environmental mastery refers to the ability to autonomously access and modify the surrounding context as well as being able to control events [72]. People with ID often receive excessive long-term support for all activities of daily living, which strongly limits the opportunities of successful experiences and the development of a sense of self-efficacy.

Psychological factors associated with psychopathological co-occurrences in persons with ID are also described within ▶ Chap. 3.

Adverse life events, including some experiences that may not seem overly traumatic to the general population, psychosocial disadvantage, poor coping skills, communication problems and issues with understanding and expressing emotions, have been linked to the development of psychiatric comorbidity in young people and adults with ID. Other psychological factors commonly associated with psychopathological causality are represented by the perception of being different and inferior to others or dependent on the support of others, poor self-esteem, negative self-image, low environmental mastery and learned helplessness.

10.4 Social Factors

Involvement in meaningful activities and living in a supportive environment is important for everyone, particularly those that have an ID, yet they may have more difficulty than those in the general population in achieving this [73]. Individuals with ID may have poor coping skills related to difficulties with problem solving and therefore require good support networks. Despite the increased levels of support that individuals with ID require, the subjective feeling of loneliness is a widespread problem in people with ID with reported prevalence rates of up to 45% [74]. A person with ID will often be socially isolated (only 6% of people with ID are in paid employment) [75], meaning they often only have a small social network mainly consisting of other service users, paid carers and family members [76]. There is a probable bi-directional relationship between loneliness in an individual with ID and physical and mental health problems [74]. Currently there is only limited evidence to suggest that loneliness in itself directly leads to the development of mental illness in the ID population, although there is some evidence to suggest that loneliness can contribute to a person with ID's existing predisposition toward mental illness [77]. Research in the general population indicates that loneliness, along with a psychological sense of belonging, can affect the experience of depression (biological, affective, behavioural and cognitive symptoms) more than the actual social support available [78].

Social factors associated with psychopathological co-occurrences in persons with ID are also described within ▶ Chap. 3 (■ Table 10.2).

People with ID are often socially isolated and discriminated or have a small social network which does not protect them from feelings of loneliness. Experiences of financial disadvantage are also frequent.

They may not be aware of their rights and be exposed to all kinds of abuse, for which they have to rely on the support of others. Their access to healthcare is often difficult and limited, and they have no control over any aspect of their living environment and no choice as to where they move or who they live with. This affects the possibility of self-determination and making decisions for one's life and health.

Table 10.2 Factors contributing to the development and maintenance of mental illness in persons with ID/ASD

Biological	Psychological	Social
Pregnancy and birth complications Pregnancy and birth complications, as well as sometimes being a cause of ID, have also been associated with brain damage and/or later development of mental illness, particularly schizophrenia	*Attachment factors* Inconsistent and insecure relationships with parental figures	*Social isolation* Social isolation, small social network (mainly consisting of other service users, paid carers and family members) and feeling of loneliness
Genetic factors Several genetic conditions show well-known behavioural phenotypes, associated with specific mental illnesses (e.g. Prader-Willi syndrome, Williams syndrome, Down syndrome, DiGeorge syndrome)	*Adverse life events* Adverse life events have been linked to the development of psychiatric morbidity in young people and adults with ID/ASD	*Economic disadvantage* Unemployment and economic disadvantage are common among people with ID/ASD, with all its consequences on mental health vulnerability
Epigenetic factors Direct (during the person's life span) and indirect (during gestation or before the conception and transmitted across generations) epigenetic changes have been associated with mental health issues	*Traumatic experiences* Proneness to be traumatised by life experiences is higher in persons with ID/ASD with higher impact on mental health. Life experiences that may not seem overly traumatic to the general population could induce a post-traumatic reaction in persons with ID/ASD	*Discrimination and stigmatisation* Discrimination by society can lead to stigmatisation in people with ID and affect their self-esteem and self-image
Physical illness Some physical illnesses, especially chronic physical illness, can predispose to certain mental health conditions such as depression or anxiety, or can determine various symptoms of mental disorders	*Difficulty to express emotions* People with ID/ASD often have difficulty to process and express their emotions, which cause in turn further psychological and relational issues	*Abuse* Individuals with ID/ASD are likely to experience all types of abuse They may not be aware of their rights and have to rely on the support of others to be advocates for their needs
Sensory impairment Sensory impairment can increase psychopathological vulnerability through a negative impact on many psychological and relational aspects	*Poor coping mechanisms* Individuals with ID/ASD may have poor coping skills related to difficulties with problem solving, managing frustration, anger and the consequences of their own behaviours	*Access to physical and mental health care* Persons with ID/ASD may face issues in accessing health care services for several reasons, including communication failure, setting inadequacy and lack of specific knowledge of the medical staff. This may negatively impact on self-determination and making decisions for their own health. This can also hinder early diagnosis and early intervention

Table 10.2 (continued)

Biological	Psychological	Social
Medication Side effects of psychotropic and non-psychotropic drugs can negatively impact on mental functioning, especially in case of polypharmacy and/or long-lasting treatments	*Self-worth* The aspects of life that society values (e.g. high social status, independence, employment, relationships and family) are those in which people with ID/ASD may have greatest difficulties, which can affect their self-esteem	*Living in inappropriate environment* Living in a pleasant and supportive environment is important for everyone, but persons with ID/ASD may have more difficulty than those in the general population in achieving this. They often have no control over any aspect of the living environment and no choice about where they move to or who they live with
	Self-image ID and ASD themselves may be experienced as a trauma, both by the person with the condition and their family. Persons with ID/ASD may feel different, inferior to others or dependent on the support of others and develop a poor or negative self-image that can contribute to mental health problems	
	Learned helplessness The persistent exposure to uncontrollable stressful and negative situations, which characterises the life of many persons with ID/ASD, can significantly reduce the individual's belief in their innate ability to achieve goals	
	Low environmental mastery Persons with ID/ASD often need and receive considerable and long-lasting support for many activities, including daily living activities. This limits the development of a sense of self-efficacy and internal locus of control	

10.5 Comorbidities

Diagnostic overshadowing occurs when the symptoms or signs of a physical or mental illness are incorrectly attributed to an individual's diagnosis of ID and hence potentially treatable causes for the presentation are neglected [79]. Overshadowing is even more likely when a person suffers from an ID and a comorbid condition, and this can further complicate the clinical picture. For this reason, it is important to be aware of common comorbidities and their association with mental illness to avoid delayed diagnosis or treatment. Psychopathological co-occurrences are the main object of the whole textbook the present chapter is included in. Heredown some short paragraphs are reported in reference to main co-occurring developmental disorders and neurological conditions.

10.5.1 Autism

Autism spectrum disorder (ASD) are a group of conditions that are characterised by a combination of social communication deficits, restricted interests and repetitive behaviours [1] (see ► Chap. 16). The prevalence of autism in those with ID is reportedly as high as 35% (in comparison to 1% in the general population) and is found to be higher in those with a lower verbal IQ or more severe disability [80]. Conversely, an IQ below 70 is found in at least

half of all people with autism [81]. There is therefore significant aetiological and diagnostic overlap between ID and ASD, leading to challenges in clearly distinguishing between the two conditions [82]. Owen et al. [24] proposed that ID, ASD and schizophrenia are connected and are part of the same neurodevelopmental disorder. He goes on to suggest that researchers need to reconsider the way in which they use diagnostic categories and focus on the developmental context of pathogenesis of certain syndromes, which could result in changes in the way in which psychiatric services are delivered.

Comprehension deficits experienced by an individual with ID may exacerbate the deficits in communication that an individual with ASD has, leading to even more challenges in diagnosing mental illness in this group. Buck et al. [83] describe how the presence of an ID makes identifying subjective symptoms of psychiatric disorders in people with ASD even more challenging due to limited expressive language resulting in those with comorbid ID and ASD being less likely to receive a diagnosis of anxiety or depression than those with ASD alone. An increased prevalence of physical aggression has been found to be associated with individuals with comorbid ID and autism [84], specifically self-injurious behaviour [85].

There is a large variation in mental illness prevalence rates in people with ASD, which may be due to difficulties in distinguishing between psychiatric illness and ASD clinically due to the conceptual overlap between the two conditions [86]. Depressive symptoms can also be misattributed to autism as symptoms such as flattened affect and social withdrawal occur in both conditions [87]. It can be difficult to distinguish the restricted and repetitive behaviours associated with ASD with the same symptoms present in obsessive compulsive disorder [88], again leading to diagnostic confusion and uncertainty. Similarly, the lack of conformity to social convention in people with ASD can be misinterpreted as mental illness. Other factors that contribute to difficulties in diagnosis of psychiatric illness in individuals with ASD include atypical psychiatric presentation in those with ASD, lack of validated instruments and lack of experienced clinical staff [89]. This emphasises the importance of taking a thorough developmental history and gathering collateral history.

Despite the variation in prevalence rates, psychiatric disorders have been found to occur frequently in adults with ASD. Mouridsen et al. [90] found rates of comorbid schizophrenia spectrum disorders to be as high as 35% in individuals with atypical autism. Conversely autistic-like traits and rates of ASD are higher in people with a diagnosis of psychosis than in the general population [91]. Recent studies suggest there are shared risk pathways between ASD and psychosis including a common genetic mechanism [92]. Anxiety is known to occur frequently in individuals with ASD [93]. Hyper- or hyporeactivity to sensory information is a known feature of ASD occurring in up to 96% of children with ASD [94]. This sensory over responsivity has been found to predict later development of anxiety disorders [95].

10.5.2 ADHD

Attention-deficit/hyperactivity-disorder (ADHD) is characterised by symptoms of inattention, hyperactivity and sometimes impulsive behaviours which interfere with functioning [1] (see ▶ Chap. 17). Pooled prevalence rates of ADHD indicate rates of 2.5% in adults without intellectual disability but higher rates in those with ID [96, 97].

Higher rates of a range of psychiatric illnesses have been found in people with ADHD [98]. The most frequent comorbid conditions are mood disorders, anxiety disorders, substance misuse disorders and personality disorder [99]. There are specific challenges in diagnosis of these comorbidities, for example, the emotional dysregulation present in ADHD could lead to misdiagnosis of a mood disorder or be labelled as challenging behaviour [100]. Equally an anxiety or mood disorder could be misattributed to ADHD symptoms. For this reason, rates of comorbid conditions vary widely in the available literature and this is an area which requires further research.

10.5.3 Epilepsy

Population-based studies of adult ID populations have found a prevalence of comorbid epilepsy to be in the region of 25% [101]. The prevalence increases with the severity of ID, occurring in 45% of those with severe ID in comparison to 15% with mild ID [102] (see ▶ Chap. 29). Up to 50% of people with comorbid ID and epilepsy have psychiatric or behavioural problems [103]. There is a complex relationship between the presence of behaviour that challenges and epilepsy in a person with ID. Although a link may exist, Blickwedel and colleagues [104] postulated that it is unlikely that epilepsy alone is the cause of challenging behaviour.

Epilepsy is associated with a range of psychiatric conditions in the general population including depression, anxiety, psychosis and personality disorders [105]. These illnesses are associated with the severity and chronicity of the epilepsy as well as type of epilepsy (increased in temporal lobe or refractory epilepsy) and adverse medication side effects.

10.5.4 Cerebral Palsy

More than 40% of children with cerebral palsy have a co-existing ID [106]. It is estimated that half of children with hemiplegia have a problem with behaviour, emotions or relationships including irritability, hyperactivity and anxiety, which has been associated with the underlying brain damage [107].

The risks of diagnostic overshadowing and misinterpretation of signs and symptoms increase along with the number and complexity of physical or mental illness that co-occur with ID/ASD. Mental health professionals must be aware of common comorbidities (i.e. ADHD, epilepsy and cerebral palsy) and their association with mental illness to limit the risk of diagnostic overshadowing and consequent delays in diagnosis or treatments.

Summary

In this chapter, we have discussed in detail the causes of mental illness in ID and their interaction. A conventional biopsychosocial framework was used to outline the causes and consequences of mental illness in people with intellectual disability. We have also discussed the challenges of diagnosing mental illness in individuals with ID and common comorbidities such as autism, ADHD and epilepsy.

Tip

Neurodevelopmental disorders frequently co-occur with other mental health problems to the point that some of them have been proposed to be part of the same neurodevelopmental disorder. Future research and clinical attention needs to reconsider the way in which diagnostic categories are used and focus on developmental context in the pathogenesis of mental illness.

Key Points

- Aetiology and pathogenesis of mental illness in ID is multi-factorial.
- There are biological, psychological and social risk factors for development of mental illness which combine to predispose an individual with ID to mental illness.
- There are several comorbid conditions which are associated with mental illness. One must be aware of overshadowing and consider assessment for mental illness.

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