Suicide and autism spectrum disorder: the role of trauma

Mental disorders are considered among the leading risk factors for suicide. According to the World Health Organization, more than 90% of people committing suicide suffer from a mental disorder. For this reason, suicide prevention needs to devote great importance to grow the awareness of the mental conditions that are most likely to raise the risk of suicidal behaviors. Several psychiatric disorders are classically linked to suicide. The lifetime risk of suicide is estimated to be 4% in patients with mood disorders [1], 8% in people with bipolar disorder [2 3], 5% in people with schizophrenia [4], and 7% in people with alcohol dependence [5]. Post-traumatic stress disorder (PTSD) as well is frequently associated with suicidal ideation and suicide attempts [6]. Suicide, in fact, has been reported as one of the most important causes of death among veterans, with the risk for intentional death continuing to be high many years after service [7 8], but remarkable rates have also been reported in general populations exposed to natural disasters worldwide [9-12].

Neurodevelopmental disorders are usually overlooked in statistics of mental conditions enhancing the risk of suicide. Notwithstanding, a recent systematic review of studies involving subjects with Autism Spectrum Disorder (ASD) found percentages of suicidality ranging from 10.9 to 50% and pointed out that individuals with ASD might comprise 7.3 to 15% of suicidal populations [13]. This seems to suggest that neurodevelopmental nisorders could play a role as important as other mental disorders in suicide risk.

For decades, ASD prevalence estimates have ranged from 0,2 to 0,9 %, far below the prevalence of depression (around 16%) [14], alcohol dependence (around 5,4%) [15], bipolar disorders (about 2,1%) [16]. This may be one of the reasons why research about suicide risk in ASD subjects has been scant and ASD is not included among mental disorders at high risk for suicide. But what should we expect now that most recent data on ASD prevalence highlight rates up to 1,4% and growing data have shown that this prevalence might still be on the rise? Whatever such grow in prevalence is due to an increased incidence or it is likely due to a greater recognition of ASD, together with the growing attention devoted to partial and subthreshold cases [17], autism related conditions might be expected to climb the rankings of suicide risk factors in the close future.

Recent evidence indicates that ASD subjects may present with a very broad range of manifestations of suicidality, including completed suicide, attempted suicide, and suicidal ideation, with this latter being the most common [18-22]. Few data also indicate that ASD subjects who attempt suicide tend to engage in more lethal methods [22]. Moreover, adolescence appears to be the highest-risk period, and high functioning ASD individuals at higher risk than low functioning ones [13 18-22].

Despite additional research is necessary to better understand how this unique population expresses suicidal tendencies [13], extant literature highlights the role of stressful life events (e.g. bullying, relationship difficulties) as triggers for suicidal attempts. It has been shown that important adverse life events, such as bereavement or exposure to natural disaster, may be particularly disruptive for subjects suffering from ASD [23 24]. Nonetheless, their limited cognitive flexibility, their rigid attitudes, their executive functioning and problem-solving difficulties make ASD subjects less likely to adjust even to minor stressors, such small changes in daily life or failures in work or private relationships, even in those cases diagnosed with subthreshold autism conditions [17]. Besides anecdotal reports of suicidal behaviors following the difficulty of ASD patients to cope with life stressors [25 26], Kato and colleagues [22] recently examined 587 suicidal patients hospitalized for inpatients treatment, reporting that the 43 with ASD were more likely to have attempted suicide in the framework of an adjustment disorder compared to non-ASD patients, who in turn were more likely to present a mood disorder.

Across the different developmental stages, a range of situations may be difficult to deal with for subjects with ASD: inclusion in the group of peers, school performance, intimate relationships. Even in those cases with normal or above normal intellectual abilities, the difficulties in expression, empathy and understanding of shared codes of communication easily lead to chronic traumatization and to social exclusion across the entire life [27 28]. Given their difficulties in mentalizing emotionally charged situations, what is usually considered a stressful life situation may come to ASD patients as a true traumatic event, while suicide may represent the only extreme way to express inner feelings and to cope with conflicts.

Further data suggest a link between suicidality and trauma and stress-related conditions among ASD subjects. In fact, despite only a few studies explored PTSD prevalence rates among ASD patients, and those who did it reported only low rates [23 29 30], Storch and colleagues [31] recently found that comorbidity with depression or PTSD is associated with increased risk for suicidal thoughts and behaviors in youth with ASD and speculated about a potential link

between ruminative thoughts associated with depression and PTSD that may increase suicide risk.

It is surprising that a population characterized by a significant vulnerability lying on the severe impairment in interpersonal relationships and the inability to cope with conflicts or deep affective involvements show low prevalence of PTSD. One possible explanation might be that the characteristic difficulties in understanding, mentalizing and expressing relationship may also latch onto the capability of understanding and expressing a traumatic event, especially in subjects with intellectual or language disability. On the other hand, another important issue to be considered is the commonly used definition of *trauma*. Our unpublished data showed that individuals with mild autistic traits and no intellectual impairment are prone to develop a full PTSD-like syndrome following "minor traumas", such as peer victimization, unsuccessful social exposures, being accused of a theft. Such stressful events do not endorse the definition of trauma of DSM-5, allowing, at the best, the diagnosis of Adjustment disorder. However, it is possible that such "adjustment disorders" underlie a more complex post traumatic stress symtomatology, aldo including the high risk of suicidal behavior recently shown in PTSD patients [8-12].

A further perspective arising from recent studies is worth being considered about the relationship among autism, suicide and trauma. While the few data available show only low rates of PTSD in ASD samples, several authors agree about ASD patients being at high risk of traumatic events, particularly because of their chronic interpersonal traumatization [27 28]. In attempting to explain the inconsistency between the high rates of traumas and the low prevalence of PTSD among ASD patients, King [27] pointed out that the typical impairments of ASD may also impact individual's capability of understanding, mentalizing and referring events as traumatic, limiting the chance that a post traumatic stress symptomatology would be recognized as such. In addition, a few authors hypothesized that ASD patients are likely to show a particular form of PTSD, arising from multiple traumas, named Complex PTSD [27 28]. Complex PTSD symptomatology is often chronic and more severe than typical PTSD symptoms, including deficits in emotional regulation, negative self-perception, interpersonal problems and dissociative symptoms [27 32 33]. It has been observed that the symptoms of Complex PTSD, prolonged across time, lead to long-term instability in interpersonal relationships, emotional lability, unstable self-perception, as well as to maladaptive behaviors, such as a broad range of suicidal behaviors and substance abuse, so that these subjects might even be labeled as having a Borderline personality disorder (BPD) [27]. From such a perspective, trauma and stress-related disorders might be the link between autistic dimension and suicidality not only among subjects with a known ASD, either subthreshold or full-blown, but also among those with a borderline phenotype covering an autistic constellation of symptoms, or in ASD subjects in which a diagnosis of comorbid BPD has been made. Somehow in agreement with this hypothesis, a small study conducted on 41 BPD patients found that those with comorbid ASD show grater suicidality than those with BPD alone [34].

While further experimental data are needed to test this latter hypothesis, we think that ASD will be gaining greater importance among risk factor for suicidality in the near future and that research into this field would benefit from focusing not only on severe autism spectrum conditions, but also on subthreshold and partial forms. The role of traumatic life events as triggers of suicide attempts among ASD subjects will also require investigation. Conversely, a more comprehensive investigations of autistic traits among PTSD patients showing suicidal tendencies should be a priority for future research.

Liliana Dell'Osso, Camilla Gesi, Claudia Carmassi

Department of Clinical and Experimental Medicine,
University of Pisa, Pisa, Italy

References

1 Bostwick JM, Pankratz VS. *Affective disorders and suicide risk: a reexamination*. Am J Psychiatry 2000;157:1925-32.

2 Hawton K, Sutton L, Haw C, et al. *Suicide and attempted suicide in bipolar disorder: a systematic review of risk factors*. J Clin Psychiatry 2005;66:693-704.

3 Nordentoft M, Mortensen PB, Pedersen CB. *Absolute risk of suicide after first hospital contact in mental disorder*. Arch Gen Psychiatry 2011;68:1058-64.

4 Palmer BA, Pankratz VS, Bostwick JM, *The lifetime risk of suicide in schizophrenia: a reexamination*. Arch Gen Psychiatry 2005;62:247-53.

5 Schneider B. *Substance use disorders and risk for completed suicide*. Arch Suicide Res 2009;13:303-16.

6 Pompili M, Sher L, Serafini G, et al. *Posttraumatic stress disorder and suicide risk among veterans: a literature review*. J Nerv Ment Dis 2013;201:802-12.

7 Guerra VS, Calhoun PS. *Examining the relation between posttraumatic stress disorder and suicidal ideation in an OEF/OIF veteran sample*. J Anxiety Disord 2011;25:12-8.

8 Kimbrel NA, Johnson ME, Clancy C, et al. *Deliberate self-harm and suicidal ideation among male Iraq/Afghanistan-era veterans seeking treatment for PTSD*. J Trauma Stress 2014:27:474-7.

9 Dell'Osso L, Carmassi C, Massimetti G, et al. *Full and partial PTSD among young adult survivors 10 months after the L'Aquila 2009 earthquake: gender differences*. J Affect Disord 2011:131:79-83.

10 Stratta P, Capanna C, Riccardi I, et al. *Suicidal intention and negative spiritual coping one year after the earthquake of L'Aquila (Italy)*. J Affect Disord 2012;136:1227-31.

[11] Carmassi C, Stratta P, Massimetti G, et al. *New DSM-5 maladaptive symptoms in PTSD: gender differences and correlations with mood spectrum symptoms in a sample of high school students following survival of an earthquake*. Ann Gen Psychiatry 2014;13:28.

[12] Cousins S. *Nepal's silent epidemic of suicide*. Lancet 2016;387:16-7.

[13] Segers M, Rawana J, *What do we know about suicidality in autism spectrum disorders? A systematic review*. Autism Res 2014;7:507-21.

[14] Kessler RC, Berglund P, Demler O, et al. *The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R)*. JAMA 2003;289:3095-105.

[15] Kalaydjian A, Swendsen J, Chiu WT, et al. *Sociodemographic predictors of transitions across stages of alcohol use, disorders, and remission in the National Comorbidity Survey Replication*. Compr Psychiatry 2009;50:299-306.

[16] Merikangas KR, Jin R, He JP, et al. *Prevalence and correlates of bipolar spectrum disorder in the world mental health survey initiative*. Arch Gen Psychiatry 2011;68:241-51.

[17] Dell'Osso L, Dalle Luche R, Maj M. *Adult autism spectrum as a transnosographic dimension*. CNS Spectr 2015 Sep 9:1-3.

[18] Shtayermman O, *Peer victimization in adolescents and young adults diagnosed with Asperger's Syndrome: a link to depressive symptomatology, anxiety symptomatology and suicidal ideation*. Issues Compr Pediatr Nurs 2007;30:87-107.

[19] Mikami K, Inomata S, Hayakawa N, et al. *Frequency and clinical features of pervasive developmental disorder in adolescent suicide attempts*. Gen Hosp Psychiatry 2009;31:163-6.

[20] Raja M, Azzoni A, Frustaci A. *AUTISM spectrum disorders and suicidality*. Clin Pract Epidemiol Ment Health 2011;7:97-105.

[21] Dickerson Mayes S, Gorman AA, Hillwig-Garcia J, et al. *Suicide ideation and attempts in children with autism*. Res Autism Spectr Disord 2013;7:109-19.

[22] Kato K, Mikami K, Akama F, et al. *Clinical features of suicide attempts in adults with autism spectrum disorders*. Gen Hosp Psychiatry 2013;35:50-3.

[23] Ghaziuddin M, Alessi N, Greden JF, *Life events and depression in children with pervasive developmental disorders*. J Autism Dev Disord 1995;25:495-502.

[24] Valenti M, Ciprietti T, Egidio CD, et al. *Adaptive response of children and adolescents with autism to the 2009 earthquake in L'Aquila, Italy*. J Autism Dev Disord 2012;42:954-60.

[25] Spencer L, Lyketsos CG, Samstad E, et al. *A suicidal adult in crisis: an unexpected diagnosis of autism spectrum disorder*. Am J Psychiatry 2011;168:890-2.

[26] Simoncini M, Miniati M, Vanelli F, et al. *Lifetime autism spectrum features in a patient with a psychotic mixed episode who attempted suicide*. Case Rep Psychiatry 2014;2014:459524.

[27] King R. *Complex post-traumatic stress disorder: implications for individuals with autism spectrum disorders-Part I*. J Dev Disab 2010;16:91-100.

[28] Dell'Osso L, Dalle Luche RP, Carmassi C. *A new perspective in post-traumatic stress disorder: which role for unrecognized autism spectrum?* Int J Emerg Ment Health 2015;17:436-8.

[29] Ghaziuddin M,Greden J, *Depression in children with autism pervasive developmental disorders: a case-control family history study*. J Autism Dev Disord 1998;28:111-5.

[30] Hofvander B, Delorme R, Chaste P, et al. *Psychiatric and psychosocial problems in adults with normal-intelligence autism spectrum disorders*. BMC Psychiatry 2009;9:35.

[31] Storch EA, Sulkowski ML, Nadeau J, et al. *The phenomenology and clinical correlates of suicidal thoughts and behaviors in youth with autism spectrum disorders*. J Autism Dev Disord 2013;43:2450-9.

[32] Cloitre M, Garvert DW, Brewin CR, et al. *Evidence for proposed ICD-11 PTSD and complex PTSD: a latent profile analysis*. Eur J Psychotraumatol 2013 May 15;4.

[33] Maercker A, Brewin CR, Bryant RA, et al. *Diagnosis and classification of disorders specifically associated with stress: proposals for ICD-11*. World Psychiatry 2013;12:198-206.

[34] Rydén G, Rydén E, Hetta J. *Borderline personality disorder and autism spectrum disorder in females: a cross-sectional study*. Clin Neuropsychiatry 2008;5:22-30.