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Human Suicide, an Overview of Management Strategies

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Abstract

Suicide is still a biologically mystery process with a high rate of human mortality. Early clinical evidence suggests that external and internal stresses may drive human neuropsychiatric instability and suicide behavior. Influenced by different stresses, clinical suicide prevention and treatment needs ever-growing diagnostic and therapeutic transition. Bridging the gap between molecular basis and psychiatric intervene has great medical or pharmaceutical importance. Currently, neural-psychiatric evidence and association has provided profound impacts in suicide knowledge gains in experiments and clinics. A great deal of neurobiological and psychopharmacological study can bring new hope for human suicide prevention in completeness. Public health and therapeutic basis are discussed. Final medical success (molecular targeting and curative therapies) in the clinic will ensure high-quality pharmaceutical exists for great numbers of diathesis-tendency and potential suffers.

Conclusion: Next generation of clinical suicide prediction, pharmacology and therapeutic landscapes will be emerged in the near future.

Keywords: *Human suicide, neurobiology, brain image, psychopharmacology, modern technology, suicide prediction*

Introduction

Epidemics analysis

Global suicide death is huge (outnumber the death of war and homicide) [1]. Approximately 2% of human mortality is accounted among all episodes of suicide behaviors [2]. However, the incidence of suicide-induced death (SID) is not average distributed. The rates of SID vary between genders, ages and geographic location. The mortality rates also vary between ways of suicide methods (gas, pesticides, rope, gun or others). These kinds of epidemic information and stress should be analyzed for suicide prediction and management promotion.

Internal (genes or pathogenesis) and external (financial crisis and interpersonal distortion) are associated with human suicide increases. Male suicide ranks secondary leading causes for human death at the age range from 15 to 34 in US [3]. In addition, old male retirees with less economic supports show double rates of human suicide behaviors comparing with average age ranges [4]. Unfortunately, human suicide is not well defined at genetic or molecular levels presently. Given a slow pace of knowledge gains for suicide behavioral and biology, accelerating therapeutic comparison between west and east should be made on medical and pharmacological bases.

Medical knowledge

General picture of biomedical study of suicide pathogenesis and intervention is depicted in early [5-10]. It contains different strategies and methods. Guideline for new diagnosis, technology and therapeutic selection can be updated by systematic investigations in molecular and clinical bases. Different topics in this respect are addressed in the followings.

There was a long history of human suicide record in literature (as long as two thousand years in history in both China and western) [11-12]. However, its medical study was not such long. There is still little pathogenesis profiling and specific drug targeting for suicide behaviors (treatments and prediction) in the clinic before this millennium. To reduce the risk and incidence of human suicide, genetic analysis and molecular clues should be translated. After these efforts and transition, management strategies and

therapeutic paradigms for human suicide can be helpful.

Medical Causalities and Diagnosis

Current concept of human suicides

Early clinical evidence suggests that external and internal risk factors or stresses may drive human neuropsychiatric consequences and suicide behavior. However, an accumulated data suggests that human suicide behavior is not an absolutely impulsive act or behaviors. It is possibly a disease-related. After two decades of hard work, association began to emerge between suicide behaviors and different types of human mental diseases [13-17]. To attain a goal of high-quality suicide management, external stresses, pathogenesis cascade and therapeutic targets should be integrated and targeted. (Figure 1)

Different symptoms and disease categories have been associated for the benefits of suicide managements (co-morbidity). Based on co-morbidity modalities, molecular clues, organ dysfunction and potential drug targets were greatly expanded nowadays. Mental health problems are the main pillow for suicide-related therapeutic industry in west. Under this psychiatric modality and framework, new therapies are gradually developing. (Figure 1)

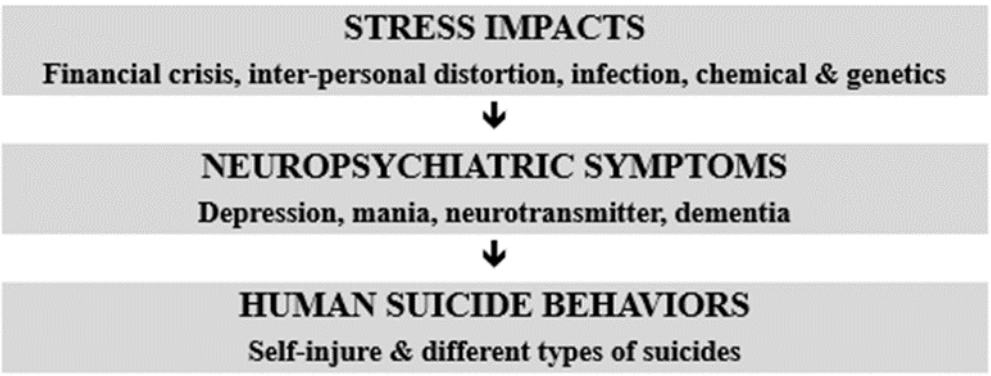

Fig 1: Potential link for suicide onset and progress

Various diagnosis paradigms

A number of anti-psychiatric management strategies are suggested to alleviate potential suicide behaviors and mortality. A long preparedment for combating suicide by existing drug categories are under investigation. Correspondingly, patho-therapeutic relation between suicidal causality and therapeutic paradigms should be built. (Table 1)

Table 1: The linkage between clinical symptoms and neurobiological technology

Psychological symptoms	Molecular technology
Language: Speech speed (low)	Genetic/epigenetic (40 known genes)
Memory or abstract capability	Cerebral morphology
Decision-making: risky and slow	Functional morphology
Social distortion	Neurotransmitter (levels and function)

To gain fundamental knowledge of human suicide, risk factors for genetic predisposition, molecular dysfunctions, multi-omics profiling and neural circuitry connection are well analyzed in statistically significant manner [16-22]. By upholding these biological studies, variable genomic techniques, suicide-associated biomarkers and therapeutic paradigms are emerged after the integration of external variables.

Patho-Therapeutic Mechanisms

Molecular and morphology profiling

Currently suicide ideation is a common feature of all human population. As a result, this public health burden needs to be overcome as early as possible. Since human mental health problems show many identical signs in suicide patients, molecular mechanisms between different psychiatric diseases and suicide ideations should be promoted.

Bad experience may possibly trigger events or behavior of suicide or self-harm. Based on this hypothesis, psychiatric trauma should be aimed for therapeutic drugs or counteractive measures. Drug development pipelines against different suicide deaths or molecules—individually or combinatorial is a modern challenge. To achieve this challenge, clinical evidence and pharmacological targets should

be focused in statistical significant manner;

Different molecular pathways for suicide treatments

Major psychiatric diseases associated with suicide (co-morbid) are autism, schizophrenia, mood disorders (depression, uni-polar or bipolar. (Table 2) Diagnostic categories have various drug selection systems and specified in Table 2 and 3.

Table 2: Molecular basis and classification for human suicide targets

Molecular diagnostic basis	Pathogenesis pathways
Neuropsychiatric pathogenesis	Hypothalamic-pituitary-adrenal axis
Biomarkers	Bone-derived neurotrophic factor (BDNF)
Morphologic characters	structural- or functional magnetized resonance images
Neurotransmitters	Dopamine, serotonin and others
Patients or relatives	Questionnaire filling

Table 3: Associations between neurotransmitters and disease categories

Neurotransmitters	Neuronal diseases
Dopamine	Schizophrenia, gabling & hypersexual
Serotonin	Depressive diseases & emotional activity
Noradrenaline	Normal psychiatric function and neural transmission

By discovering neuropsychiatric genes or molecules, more effective targeted therapeutics or drugs will be developed [23].

Common means and therapies for suicide reduction

Different types of management strategies in the clinic are listed as

- Education for students, teachers or clinicians [24]
- Stress response mechanisms
- Diathesis and prevention
- Cognitive-behavioral therapy (CBT)
- Restriction for lethal means
- Anti-psychiatric agents
- Drug treatments
- Traditional medicine (herbs) [25]
- Treatment of co-morbid [26]
- High-quality nursery [27-28]

Most available drugs

Currently, the widest used drugs for suicide are ketamine, lithium and clozapine [16]. The effect of ketamine is acute and short. It commonly treats patients in suicide ideation. Its treatment is commonly through injections and responses are quick.

However, lithium and clozapine take effective in long-term and relatively cheaper. They must be aimed on long-term symptoms and disease management.

Importance of basic scientific studies

Since most psychiatric diseases are chronic diseases, curable therapeutics against mental disorders is still a medical dream. It also affects the high-quality of suicide prediction and prevention [29-35].

Development of curative efficacy should be based on targeting genetics and molecules of disease origins. In order to accomplish this challenge, molecular diagnostics and therapeutics for mental diseases should be future trends. However, the understanding of molecular mechanisms of suicide causality is important yet difficult. To elucidate this topic, mental health problem diagnosis is categorized at different molecules and multiple levels.

Future Direction

Modern diagnosis

Neuropsychiatric diagnosis should be a dominant paradigm for mental disorder diagnosis and treatments. Psychiatrists or clinicians review and treat patients from the analysis of psychiatric sign and scores. This pattern of clinical trials was challenging by modern technology (biological profiling from genome to multi-omics) [36-40]. Combination and integration of both inside and outside stresses is obviously better than those of one system.

Molecular targeting for suicide

Currently, drug for human suicide is a new pharmaceutical challenge. In order to change this situation, molecular drug mechanism and target study is indispensable [41-45]. From molecular study, new drug targets and responses should be investigated at genetic or molecular profiles or levels.

Emotional control

According to law of traditional Chine medicine (TCM), human illness is caused by emotional instability and angry. The hidden molecular aberrant in human is not enough to create a disease or suicide behaviors. In context of Chinese medical book, there are recorded of "disease is caused by psychiatric health problems" , "disease pathogenesis origins in human bodies, angry will be a major risk factor for different disease emerge", "angry" is the main source of most diseases. According to these remarks, we create a modality of human suicide prevention by TCM. (Figure 2).

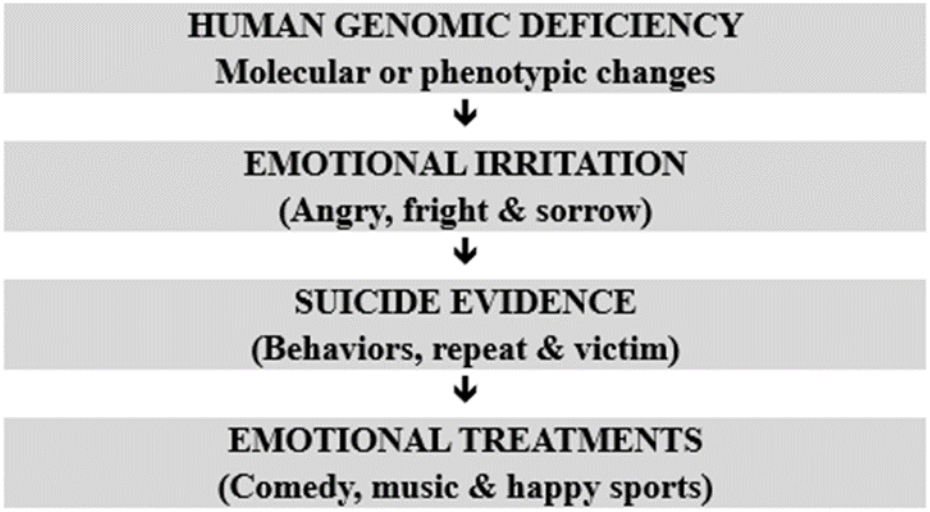

Fig 2: Chinese ways of suicide emergency mechanisms

Knowledge breakthroughs

Neuropsychiatric pathological knowledge can help us to alleviate suicide ideation and behaviors at the greatest rates. To attain this goal, knowledge and technical breakthrough is indispensable, especially curative treatments in the future. Only through molecular biological discovery, a great difference (curative therapy) can be made in the clinical trials.

Conclusion

New vision should be created for the promotion of suicide prevention in the clinic [46-48]. The relationships between chemical, genetic, molecular, morphologic, neurologic, environmental, social and cultural factors should go individually and curable treatments by the utility of bio-agents or PM. In search for suicide-related causations and targeting, molecular biology knowledge is the key [46-48]. By achieving this ambitious plan, new breakthroughs are expecting.

Conflicts Of Interests

Authors declare there is no conflict of interests with other institutes and academies.

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