

Perspectives on Emergency Medicine in Psychiatry

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Emergency medicine is the medical specialty dedicated to the management of urgent aspects of illness and injury, affecting patients with a full spectrum of undifferentiated physical and behavioral disorders. The practice of emergency medicine includes the initial evaluation, diagnosis, and treatment for any patient requiring expeditious medical, surgical, or psychiatric care¹⁾. A rapidly growing number of psychiatric patients are resorting to using emergency rooms. About 10 to 25% of all emergency department visits is patients with mental illness such as panic disorder, major depression, bipolar disorder, and schizophrenia²⁾. Moreover, recent research indicated that approximately 50% of frequent emergency room users have a mental health diagnosis, and this group has higher rates of morbidity and mortality³⁾. Some of these patients will need to be treated by a psychiatrist and sometimes admitted to a psychiatric ward. Others will need to be treated by an emergency physician and sometimes admitted to an intensive care unit. The former category implies 'emergency psychiatry', that deals with attempted suicide, substance abuse, depression, psychosis, violence or other rapid changes in behavior. The latter implies 'physical emergency medicine', that deals with urgent physical diseases of people with mental illness, including cerebrovascular disease, cardiovascular accident, fatal arrhythmia, severe pneumonia, ileus, septic shock, diabetic ketoacidosis, severe electrolyte abnormality, rhabdomyolysis, fractures, and so on⁴⁻⁸⁾. Physical emergency medicine of psychiatric patients is less recognized than emergency psychiatry. In this article, we discuss the need of physical emergency medicine for people with mental illness, that could be named 'emergency medicine in psychiatry: EMIP'.

There are two reasons for the need of EMIP as illustrated in Figure 1. One reason is to increase life expectancy of people with mental illness. The physical health of psychiatric patients is commonly ignored not only by themselves but also by health systems, resulting in crucial physical health disparities⁹⁾. People with severe mental illness die on average 15 to 20 years earlier than others¹⁰⁾. These early deaths are not primarily due to suicide, but to physical diseases that occur more fre-

quently. These excess deaths are not prevented adequately because they are not identified early enough and are not treated effectively¹¹⁾. By the way, the causes of poor physical health in psychiatric patients are complex and interactive. Factors that account for these excess deaths include unhealthy lifestyle behaviors and adverse effects of antipsychotic medication, which increase the likelihood of developing obesity, hypercholesterolemia and metabolic syndrome, resulting in an increase in cardiovascular disease. Thus, to control antipsychotic adverse effects and to keep healthy lifestyle are essential for an increase in lifespan of psychiatric patients. The research on antipsychotic adverse events becomes one of the hallmarks of EMIP.

The other reason for the need of EMIP is to investigate mechanisms of severe mental illness with the clue of physical symptoms that psychiatric patients presented at an emergency room. I would like to explain more specifically with some examples. We experienced a schizophrenia patient with septic shock who developed delusion and hallucination with norepinephrine. A well-controlled female schizophrenia patient was transferred to our emergency room from a psychiatric hospital because of pyrexia and serious hypotension. To maintain blood pressure, norepinephrine was started after massive intravenous infusion according to the guideline for septic shock. Surprisingly, she became irritated and developed delusion and hallucination soon after norepinephrine drip. Dopamine was used instead of norepinephrine, resulted that she became calm down. Norepinephrine but not dopamine developed delusion and hallucination in this patient. A number of hypotheses have been put forth regarding the etiology of schizophrenia, including dopamine hypothesis and glutamate hypothesis. However, a lesser known theory is that elevated norepinephrine signaling plays a causative role in schizophrenia. This phenomenon observed at emergency room may provide the evidence to support the role of norepinephrine in the pathophysiology of schizophrenia¹²⁾. Another example is bacterial translocation. We reported a schizophrenia patient with bacterial translocation whose psychotic symptoms were reduced by the treatment with some

EMIP (Emergency Medicine in Psychiatry)



Two reasons for the need of EMIP

- To increase life expectancy of people with mental illness by studies on adverse effects of psychotropic agents.
- To investigate mechanisms of severe mental illness with the clue of physical symptoms that psychiatric patients presented at an emergency room.

* Examples of physical diseases
cardiovascular accident, fatal arrhythmia, severe pneumonia, septic shock, diabetic ketoacidosis, severe electrolyte abnormalities, fractures, and so on.

Figure 1. Two reasons for the need of emergency medicine in psychiatry (EMIP)

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oral probiotics including Clostridia (*Clostridium butyricum*). The patient's feces were collected before and after the initiation of probiotic treatment to check gut microbiota using the terminal-restriction fragment length polymorphism method. The alleviation of psychotic symptoms is associated with the change of bacterial flora¹³. Recent basic study indicated that Clostridia could induce regulatory T cells¹⁴, which have a central role in the suppression of inflammation and may improve psychotic symptoms. Differences in microbiome have been shown in severe mental illness in comparison to healthy controls¹⁵. Although evidence that probiotics can improve psychiatric functioning is still very limited, gut microbiota participates in the course of mental illness and is a new target for treating severe mental illness¹⁶. EMIP will provide many suggestions regarding mechanisms of mental illness.

EMIP is an interdisciplinary specialty area. There are few academic journals to publish articles concerning interdisciplinary studies. The *International Medical Journal (IMJ)* is intended to provide multidisciplinary articles for the exchange of ideas and information among professionals. The author wishes to steer *IMJ* for the fruitful development of EMIP.

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