

CASE REPORT

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Anti-N-methyl-D-aspartate receptor encephalitis associated with an ovarian teratoma: two cases report and anesthesia considerations

Haiyang Liu, Minyu Jian, Fa Liang, Hongli Yue and Ruquan Han*

Abstract

Background: Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis is an immune-mediated syndrome caused by the production of anti-NMDAR receptor antibodies. The syndrome characterised by psychosis, seizures, sleep disorders, hallucinations and short-term memory loss. Ovarian teratoma is the confirmed tumour associated with anti-NMDAR antibodies. The patients with anti-NMDAR encephalitis complicated by ovarian teratoma require surgical treatment under general anesthesia. NMDARs are important targets of many anesthetic drugs. The perioperative management and complications of anti-NMDAR encephalitis, including hypoventilation, paroxysmal sympathetic hyperactivity (PSH) and epilepsy, are challenging for anesthesiologists.

Case presentation: This report described two female patients who presented for resection of the ovarian teratoma, they had confirmed anti-NMDAR encephalitis accompanied by ovarian teratoma. Two patients received gamma globulin treatments and the resection of the ovarian teratoma under total intravenous anesthesia. They were recovered and discharged on the 20th and 46th postoperative day respectively.

Conclusions: There is insufficient evidence about the perioperative management, monitoring and anesthesia management of anti-NMDAR encephalitis. This report was based on the consideration that controversial anesthetics that likely act on NMDARs should be avoided. Additionally, BIS monitoring should to be prudently applied in anti-NMDAR encephalitis because of abnormal electric encephalography (EEG). Anesthesiologists must be careful with regard to central ventilation dysfunctions and PSH due to anti-NMDAR encephalitis.

Keywords: Anesthesia, Teratoma, Anti-NMDAR encephalitis

Background

Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis is an immune-mediated syndrome characterised by psychosis, seizures, sleep disorders, hallucinations and short-term memory loss [1, 2]. This syndrome has been predominantly described in young females (81 %), and ovarian teratoma is the confirmed tumour associated with anti-NMDAR antibodies [3]. One multi-centre prospective epidemiological study demonstrated that anti-NMDAR encephalitis accounted for 4 % of all encephalitis cases [4]. Anti-NMDAR encephalitis has gradually attracted the attention of anesthesiologists because patients with anti-NMDAR encephalitis complicated by

ovarian teratoma require surgical treatment under general anesthesia. Here, we describe two female patients who presented for laparoscopic resection of the ovarian teratoma, they had confirmed anti-NMDAR encephalitis accompanied by ovarian teratoma.

Case presentation

Case 1

A 31-year-old previously healthy woman (165 cm, 45 kg, ASA I-II) was brought to the emergency room with confusion, agitation, and auditory hallucinations after being admitted to another hospital with seizures and agitation. Intracranial infection was suspected; thus, sedation and appropriate antibiotic treatment were started. The following day, she suffered from hallucinations and developed a regular, involuntary twitch in her right upper limb, mouth, tongue and masticatory muscles.

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Anti N Methyl D Aspartate Receptor Encephalitis Associated Teratoma

Susannah Cahalan



Anti N Methyl D Aspartate Receptor Encephalitis Associated Teratoma:

Anti-N-Methyl-d-aspartate Receptor Encephalitis Associated with an Ovarian Teratoma: Two Cases Report and Anesthesia Considerations Applied Research Applied Research Press,2015-12-08 This open access article by various

authors presents key research on Anti N methyl D aspartate receptor encephalitis associated with an ovarian teratoma two cases report and anesthesia considerations Anti N methyl D aspartate receptor NMDAR encephalitis is an immune mediated syndrome caused by the production of anti NMDAR receptor antibodies The syndrome characterised by psychosis seizures sleep disorders hallucinations and short term memory loss Ovarian teratoma is the confirmed tumour associated with anti NMDAR antibodies The patients with anti NMDAR encephalitis complicated by ovarian teratoma require surgical treatment under general anesthesia NMDARs are important targets of many anesthetic drugs The perioperative management and complications of anti NMDAR encephalitis including hypoventilation paroxysmal sympathetic hyperactivity PSH and epilepsy are challenging for anesthesiologists

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Pathogenesis of Encephalitis Daisuke Hayasaka,2011-12-09 Many infectious agents such as viruses bacteria and parasites can cause inflammation of the central nervous system CNS Encephalitis is an inflammation of the brain parenchyma which may result in a more advanced and serious disease meningoencephalitis To establish accurate diagnosis and develop effective vaccines and drugs to overcome this disease it is important to understand and elucidate the mechanism of its pathogenesis This book which is divided into four sections provides comprehensive commentaries on encephalitis The first section 6 chapters covers diagnosis and clinical symptoms of encephalitis with some neurological disorders The second section 5 chapters reviews some virus infections with the outlines of inflammatory and chemokine responses The third section 7 chapters deals with the non viral causative agents of encephalitis The last section 4 chapters discusses the experimental model of encephalitis The different chapters of this book provide valuable and important information not only to the researchers but also to the physician and health care workers

Biomarkers in Autoimmune Diseases of the Central Nervous System Mei-Ping Ding,Long-Jun Wu,Shougang

Guo,Honghao Wang,Yin-Xi Zhang,2023-09-25 Autoimmune diseases of the central nervous system CNS are a group of complex and disabling disorders characterized by the immune system mistakenly attacking the CNS During the last 2 decades we have witnessed a rapidly evolving spectrum of CNS autoimmune diseases which has become a research hotspot in neurology These include CNS inflammatory demyelinating diseases such as multiple sclerosis and neuromyelitis optical spectrum disorders paraneoplastic and other autoimmune encephalomyelitis and CNS involvement in systemic autoimmune diseases Recently although remarkable discoveries have accumulated more understanding of the autoimmune basis behind the physiopathologic mechanism the exact pathogenic processes are still unclear Patients may present with a variety of manifestations posing a great challenge to diagnosis and management The determination of biomarkers plays a significant role in CNS autoimmune diseases Biomarkers can reflect the presence nature and intensity of certain immune responses triggered by both genetic and environmental processes and bear great importance in guiding clinical diagnosis estimating disease risk or prognosis evaluating disease severity and monitoring progression or response to therapy For instance the detection of disease specific antibodies can contribute to the accurate diagnosis and precise treatment Moreover identifying the diverse biomarkers could further help to achieve the ultimate goal of personalized medicine **Neuropsychiatric**

Symptoms of Inflammatory Demyelinating Diseases Bruno Brochet,2015-07-23 This book is an up to date comprehensive review of the neuropsychiatry of multiple sclerosis and related diseases by active authorities in the field with an emphasis on diagnosis and management Critical appraisal of the methodological aspects and limitations of the current research on the neuropsychiatry of demyelinating diseases is included and unanswered questions are highlighted Pharmacological aspects of management are discussed Neuropsychiatric Symptoms of Inflammatory Demyelinating Diseases is aimed at neurologists multiple sclerosis specialists and psychiatrists and will also be of interest to intensive care doctors psychologists ad neuropsychologists research and specialist nurses clinical researchers and methodologists **Vasculitis**

and the Nervous System, An Issue of Neurologic Clinics David S. Younger,2019-04-13 This issue of Neurologic Clinics guest edited by Dr David S Younger covers Vasculitis and the Nervous System Topics include but are not limited to History and Background of Vasculitis Overview of Primary and Secondary Vasculitis Epidemiology of Primary Systemic Vasculitis Comorbidity and Health Outcomes of Vasculitis Experimental Autoimmune Vasculitis Genetic Basis of Vasculitides General Approach to the Patient with Vasculitis ANCA Associated Vasculitis Polyarteritis Nodosa Giant Cell Arteritis Dermatologic Aspects of Vasculitides Neuro Ophthalmologic Aspects of Vasculitides The Blood Brain Barrier Implications for Vasculitis Adult Primary Angiitis of the Central Nervous System Childhood Inflammatory Brain Diseases Adult Vasculitic Stroke Central Nervous System Vasculitis Due to Substance Abuse Peripheral Nerve Vasculitis Classification and Disease Associations Hashimoto Encephalopathy Autoimmune Encephalitis or Vasculitis and Treatment of Primary Systemic and Nervous System Vasculitis Paraneoplastic Neurologic Disorders ,2024-03-15 This book extensively reviews Paraneoplastic Neurological

Syndromes in light of the most recent descriptions of autoantibodies against neuronal cell surface antigens only partly associated with paraneoplastic disorders and the introduction of new immuno oncological drugs that can contribute to causing diseases that are pathogenetically indistinguishable from paraneoplastic syndromes These two new developments have not been addressed in other volumes available on the market Section 1 focuses on immunological defense mechanisms against tumors Besides investigating the pathogenetic mechanisms of these disorders this section will also explore what the introduction of new drugs used in immune checkpoint inhibitor cancer therapy is teaching us in terms of immunopathogenesis The second section will present individual syndromes phenotypical clinical manifestations of the CNS PNS NMJ and muscle These chapters will however be preceded by an epidemiological analysis and a chapter describing the clinical approach to patients with these disorders Consideration will also be given in specific chapters to general therapeutic strategies and the techniques used to search for diagnostically relevant autoantibodies Presentation of the individual diseases will be followed by a third section investigating the role of antibody markers presented in three chapters differentiating cytoplasmic nuclear and neuronal cell surface reactivities The innovative component of the final two sections compared to previously published volumes lies in their presentation of the profile of paraneoplastic diseases by tumor type Special attention will be given to thymoma involved particularly with novel antibodies against surface antigens and neuroendocrine tumours which are as yet comparatively unexplored in the literature Lastly a clinical update will be provided on gynecological hematological and testicular malignancies The last section will address side effects of the new immuno oncological drugs increasingly used in cancer therapy The high number of neurological complications that occur when tumor checkpoints are inhibited against immune defences provides the ideal experimental model for understanding the pathogenesis of these diseases Profiles paraneoplastic diseases by tumor type Identifies the pathogenetic mechanisms of PNS and provides epidemiological analysis Presents individual syndromes of the CNS PNS NMJ and muscle Investigates the role of antibody markers Differentiates cytoplasmic nuclear and neuronal cell surface reactivities Discusses immune oncological drugs causing diseases that are indistinguishable from PNS Reviews therapeutic strategies and clinical approach to PNS patients

Neuroimmunology Amanda L. Piquet, Enrique Alvarez, 2021-03-08 This book provides a clinical focus on neuroinflammatory diseases as well as a review in pathophysiology and treatment approaches Organized into six parts the book begins with a basic review of the immune system and concepts for learning and treating neuroimmune conditions The next four sections cover specific subfields of neuroimmunology and autoimmune neurology the clinical and diagnostic features of multiple sclerosis other autoimmune conditions of the central nervous system autoimmune conditions of the peripheral nervous system and systemic autoimmune conditions that affect the nervous system To conclude Section six discusses various clinical approaches to specific presentations in neuroimmunology including pediatric demyelinating diseases These sections provide practical clinical information to improve the reader s knowledge in this complex field The

chapters are written by world renown authors with extensive knowledge to help provide up to date information The full scope of autoimmune neurology is discussed which is a unique feature of this book Neuroimmunology serves as a resource for those in training including residents and fellows to provide clear clinical reasoning and background in a rapidly advancing field

Brain on Fire Susannah Cahalan, 2012-11-13 NOW A MAJOR MOTION PICTURE STARRING CHLO GRACE MORETZ A captivating The New York Times Book Review award winning memoir and instant New York Times bestseller that goes far beyond its riveting medical mystery Brain on Fire is a powerful account of one woman s struggle to recapture her identity When twenty four year old Susannah Cahalan woke up alone in a hospital room strapped to her bed and unable to move or speak she had no memory of how she d gotten there Days earlier she had been on the threshold of a new adult life at the beginning of her first serious relationship and a promising career at a major New York newspaper Now she was labeled as violent psychotic a flight risk What happened In an unforgettable Elle stunningly brave NPR and breathtaking narrative Susannah tells the astonishing true story of her descent into madness her family s inspiring faith in her and the lifesaving diagnosis that almost didn t happen A fascinating look at the disease that could have cost this vibrant vital young woman her life People Brain on Fire is an unforgettable exploration of memory and identity faith and love and a profoundly compelling tale of survival and perseverance

Undiagnosed and Rare Diseases in Children, An Issue of Pediatric Clinics of North America Robert Kliegman, Brett J. Bordini, 2016-12-01 Dr Kliegman and Dr Bordini have written a primer on Undiagnosed and Rare Diseases in Children Leading experts have presented the current knowledge in the following areas How Doctor s Think Common Diagnostic Errors in Clinical Judgment Team Based Approach to Undiagnosed and Rare Diseases Ending a Diagnostic Odyssey Family Education Counselling and Their Response to Eventual Diagnosis Eczema and Urticaria as Manifestations of Undiagnosed and Rare Diseases Usual and Unusual Manifestations of Familial Hemophagocytic and Langerhans Cell Histiocytosis Syndromes When Autistic Behavior Suggests a Disease Other than Classic Autism Non classic Inflammatory Bowel Disease in Young Infants IPEX and Other Disorders Usual and Unusual Presentation of Mitochondrial Disorders When to Suspect Auto inflammatory Recurrent Fever Syndromes Primary and Secondary Causes of Autonomic Dysfunction Usual and Unusual Manifestations of Systemic and CNS Vasculitis Fever of Unknown Origin Differentiating Familial Neuropathies from Guillain Barre Syndrome and Munchausen by Proxy A Factitious Undiagnosed Disease Readers will come away with cutting edge information to use immediately in their clinical management of patients

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