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THYMECTOMY IMMEDIATELY AFTER MYASTHENIC CRISIS - CASE REPORT

TIMEKTOMIJA NEPOSREDNO PO ZAVRŠETKU MIASTENIČNE KRIZE – PRIKAZ SLUČAJA

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Abstract

Introduction

Myasthenic crisis refers to rapid progression of myasthenic weakness accompanied by ventilatory and bulbar dysfunction. As there is not accepted a single standard in the treatment of every patient in myasthenic crisis, we report our experience in the treatment of a patient in crisis.

Case report

We report a 22 years old patient with clinical, pharmacological, neurophysiological and immunological diagnosis of seropositive and generalized MG unsecure course. During the first 6 months of disease three deteriorations were registered and the last one developed in myasthenic crisis. The patient was intubated, earlier anticholinergic and imunosuppresive therapy were corrected, and he was treated with plasma exchanges and humane immunoglobulins during the crisis. Thymectomy performed 3 weeks after extubation and after thymectomy the patient was stable.

Conclusion

Progress in treatment of the MC over the last few decades, has dramatically improved prognosis of myasthenic crisis.

Thymectomy is useful in prevention recurrence of MC.

Kay words: myasthenic crisis, thymectomy, myasthenia gravis
Apstrakt

Uvod

Miastenična kriza dovodi do brze progresije miastenične slabosti koja je udružena sa respiratornom i bulbarnom disfunkcijom. Kako nije prhvaćen strogo nijedan standard u lečenju svih pacijenta u krizi, prikazujemo naša iskustva u lečenju ovih pacijenta.

Prikaz pacijenta

Prikazujemo pacijenta starog 22 godine sa klinički, farmakološki i imunološki dijagnostikovanom seropozitivnom, generalizovanom miastenijom gravis nesigurnog toka. Tokom prvih 6 meseci bolesti registrovano je tri pogoršanja, dok se poslednje razvilo u miasteničnu krizu. Pacijent je intubiran, ranija antiholinesterazna i imunosupresivna terapija su korigovane a on je lečen izmenama plazme i humanim imunoglobulinima tokom krize. Timektomija je radjena 3 nedelje posle extubacije a iza timektomije pacijent je bio stabilan.

Zaključak

Napredak u lečenju miastenije krize tokom poslednjih decenija dramaticno je poboljšao prognozu miastenične krize.

Timektomija je od koristi u prevenciji ponavljanih miasteničnih kriza.

Ključne reči: miastenična kriza, timektomija, miastenija gravis

Introduction

Myasthenic crisis (MC) is one of the most urgent conditions in neurology. The definition of MC is best formulated by a group of experts for myasthenia gravis (MG) who considered that this is a condition in which the patient is vitally threatened by rapid progression of the disease, ventilatory and bulbar dysfunction (1). Therefore, respiratory insufficiency accompanied by exacerbation of the disease is a sufficient criterion for the diagnosis of myasthenia crisis in patients with MG.
Myasthenic crisis means the state of delayed postoperative extubation for more than 24 hours after the operation because of respiratory failure in patients with MG, also (2).

As therebis not accepted a single standard in the treatment of every MG patients because of heterogenity of the disorder *1*, similar is in case patients in MC which is common accomodation in the intensive care unit, intubatin, recognition and treatment of triggers that are introduced the patient in this condition and correction of earlier therapy.

According to individual approach to each patient with MG, we report our experience with the patient in crisis.

Case report

Patient 22 years old the first manifestation of the disease had at the beginning of 2016. in the form transient episode of double vision when the disease has not been identified and he was under syndromic diagnosis treated with parenteral corticosteroid therapy for three days with the complete recovery of neurological deficit.

A year and a half later, the ambiguities followed by semiptosis, speech difficulties, and weakness in the proximal arm muscles manifested unprovoked.

Then, clinical, pharmacological, neurophysiological and immunological diagnosis of seropositive (acetylcholine receptor antibody 5.8 nmol/L) and generalized MG was established.

After initiation of corticosteroid therapy, the patient experienced a deepening of myasthenic weakness, primarily in the form of oculo-bulbar dysfunction. Because of that, we made a series of five therapeutic plasma exchange (PE) alternatively, after which the patient is achieved complete but a short-term remission, due to planned thymectomy was not made. Over the next two and a half months, there was a development of more pronounced weakness in terms of eyelid weakness, transient episode of dysphagia and difficulty chewing, as well as weakness of the neck muscles.

An increase in oral dosage of corticosteroids and Mestinon, resulted in some improvement but not complete recovery. However, after the next series of five additional PE the neurological deficit retired again for a short time. Two months later, on February
2018 there was a deepening of generalized weakness, again, but this time with occasional suffocation, mostly at night.

The patient was hospitalized on February 2018 when done two PE with a significant but incomplete repair, and because the patient becomes febrile (38.8 °C), PE was suspended, an antibiotic and antipyretic therapy has been administered, and haemoculture took. After initial improvement, comes to a deepening the existing muscle weakness of cervical musculature, problems with swallowing and speaking, weakness of eye muscles, and episodes shortness of breath, which was accompanied by increased secretion in the nose and the mouth, and the fall of saturation (PCO2 41 mmHg / 51 mmHg PO2), because the patient was intubated.

It was concluded that it is a myasthenic crisis and anticholinergic therapy suspended but started parenteral corticosteroid therapy and intravenously human immunoglobulins (IVIg) therapy at a dose of 0.4 g / kg body weight during 5 consecutive days.

The patient in the next 10 days was intubated when was regularly monitored vital parameters, laboratory blood and urine tests. After stabilization of his general condition and normalization of muscle strength, the patient was extubated.

The patient had a transient episode of strabismus and nasal speech during two days, one week after he was extubated, which is spontaneously pulled. Thymectomy performed three weeks after extubation via video-assisted thoracoscopic surgery (VATS) with previous antibiotic preparation and a one-day administration of IVIg.

The operation past without complications, the patient breathes spontaneously immediately after the surgery, he was with stable vital parameters and almost normal neurologic status and no significant muscle weakness and fatigue all the time.

Histopathological examination of the thymus pointed to hyperplasia of the thymus.

In the next 6 months, the patient had no clinical deterioration.

**Discussion**

We present a patient with an unstable preoperative course of MG. Initiation of corticosteroid therapy precipitate myasthenia deterioration of weakness and it was a reason
for therapy by PE with transient effects. Infectious syndrome started third, the most difficult deterioration of the disease accompanied by respiratory failure—myasthenic crisis.

According to the literature (3), about one-fifth of patients with myasthenia gravis experience crisis during their life, usually within the first year of illness. The interval from disease onset to first MC was in the range 0.5 – 60 months (median interval 6 months), and most of them (60.6%) experienced recurrent (≥2) episodes. Most of these patients were acetylcholine receptor antibody-positive (72.7%). Similar to the above, our patient had seropositive generalized MG and he developed MC during the first year since the beginning of clear symptoms of the disorder.

As precipitating factors for myasthenic crisis mentioned infections and sepsis, surgical procedures, beginning treatment with corticosteroids or rapid tapering of it, exposure to some drugs that may increase myasthenic weakness, pregnancy, reaction to iodinated contrast, but infection is the most common (2, 4). In our patient initiation of corticosteroid therapy was accompanied by deepening weaknesses and infectious episodes started MC in his case.

The authors did not agree about cholinesterase inhibitors and MC; according to some, it is recommended in the crisis (5), while most agree that it should be discontinued (6, 7). Cholinesterase inhibitors was discontinued in our patient during artificial ventilation and we believe that it is a way to more easily repair acetylcholine receptors of skeletal muscles, to provide better response to the cholinesterase inhibitors according to its re-introduction.

All authors agree that MG patients need PE, IVIg, corticosteroids, immunosuppressants especially azathioprine, and lately a monoclonal antibody therapy with rituximab as remaining treatment of MC (8). Plasma exchange during an MC was significantly associated with early extubation (3) as PE can rapidly eliminate the pathological autoantibodies. We used PE as a superior immunomodulatory therapy in the case of our patient, but it had to be replaced with IVIg because of fever.

Although guidelines for extubation in patients without MG are clear (vital capacity ≥15 ml/kg, maximal inspiratory pressure ≤−20 cm H₂O, expiratory pressure >40 cm H₂O, and tidal volume ≥5 ml/kg (9) there is a lack of strict criteria for when and how to safely extubate patients in MC because of their fluctuating weakness. Decision to extubate MG
patients relies mostly on the clinical judgment of the neurologist. Our patient was extubated at the moment when power of all skeletal muscles that could be tested was good which proved correct because clinical remission was maintained after extubation.

The duration of ventilation during an MC is an important indicator of treatment efficacy: early extubation was defined as ventilation support for <7 days; prolonged ventilation was defined as the requirement for mechanical ventilation for >15 days (10). A third of patients with MC achieved early extubation (≤7 days), and only a quarter of patients needed prolonged ventilation (>15 days). Younger patients with PE tended to undergo successful early extubation, while older male patients with atelectasis tended to have poor outcomes (3).

recurrence of MC and patients who underwent thymectomy had significantly fewer MC episodes and a longer duration between MC attacks (3) we decided to perform thymectomy in our patient immediately after stabilization his condition, 3 weeks after extubation. This decision turned out to be correct because the patient after thymectomy was stable. Our decision is not premature confirmed by the experience of other authors who made thymectomy on his patient during MC, when he was still on artificial respiration (11).

Myasthenia crisis is not exclusively associated with thymoma proves the fact that the thymoma sees only at quarters of patients in crisis (3). The histopathological findings of our patient pointed to thymic hyperplasia.

Progress in the recognition and treatment of the MC over the last few decades, has dramatically improved prognosis of myasthenic crisis and change a mortality rate from 75% to the current rate of less than 5% (2, 9).

**Conclusion**

Patients in MC require accommodation in the intensive care unit, intubation, recognition and treatment of triggers and correction of earlier therapy. As thymectomy is useful in prevention recurrence of MG, in our patient thymectomy done immediately after extubation. After thymectomy, the patient was stable.

There is need for individually approach to each patient with MC.
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