

PROPOFOL INFUSION SYNDROME (P.R.I.S.)

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[Sindrome da infusione di propofol (P.R.I.S.)]

SUMMARY

The authors having described a rare but often fatal syndrome known as Propofol infusion syndrome (P.R.I.S.) focus on its pathophysiology, diagnosis and treatment. They conclude by plotting the steps to be implemented in order to speed up the elimination of Propofol.

RIASSUNTO

Gli Autori dopo aver descritto una sindrome rara ma spesso fatale, nota come Sindrome da infusione di Propofol (P.R.I.S.) si soffermano sulla fisiopatologia, diagnosi e trattamento.

Concludono riportando le tappe da attuare al fine di velocizzare l'eliminazione del Propofol.

Key words: General anesthesia, metabolic acidosis, hemodynamic instability, rhabdomyolysis, myoglobinuria

Parole chiave: Anestesia generale, acidosi metabolica, instabilità emodinamica, rhabdomiolisi, mioglobinuria

Introduction

Propofol infusion syndrome (P.R.I.S.) is a rare and often fatal syndrome described in critically ill children undergoing long-term Propofol infusion at high doses. Recently several cases have also been reported in adults. Although general anesthesia with Propofol is usually extremely safe, following large-dose infusion some patients may experience severe metabolic acidosis, severe metabolic acidosis, hemodynamic instability, muscle involvement with rhabdomyolysis and myoglobinuria, renal failure, heart failure and multiorgan failure leading to death.

Pathophysiology

It is believed that the pathophysiological mechanism of P.R.I.S. is secondary to alterations in fatty acid oxidation and the mitochondrial respiratory chain, leading to lactic acidosis and cardiac muscle necrosis and a peripheral.

In addition, high doses of propofol (infusion at a rate >65 mcg / kg / min for more than 48 h), supportive treatments with catecholamines and corticosteroids, and inadequate supply of carbohydrates appear to act as triggers.

From the foregoing, it would seem simple to eliminate the risk of P.R.I.S. by avoiding the use of Propofol for long-term sedation in ICU (we stress that the leaflet contains this type of contraindication), but in reality many case reports have documented P.R.I.S. during infusion for short-term anesthesia.

It is not known, therefore, whether these cases represent the unmasking of a subclinical mitochondrial disease or aggravation of mitochondrial dysfunction mediated by oxidative stress of surgery or the detection of subclinical Propofol infusion syndrome in susceptible patients.

We must also take into account the possibility of drug-genomic differences in individuals, in particular the existence of polymorphisms in drug metabolic pathways of mitochondrial respiration, the

transport of electrons, which may be different in those that develop the syndrome? Nevertheless, these specific mechanisms remain unknown.

Diagnosis and treatment

While the incidence of P.R.I.S. is rare in cases with less than 2 h of high rate infusion, for cases with longer administration, especially at high rates of infusion, it may be prudent to monitor the pH and lactate. The development of lactic acidosis that can not be explained by other causes should raise the issue of early P.R.I.S.

Warning signs are ominous: right bundle branch block with ST segment cannot a convex curve in the right precordial leads (V1 to V3 ECG), blood pressure, urine color marsala suggestive of myoglobinuria or rhabdomyolysis. Blood levels of C4 or C5 acycarnitina may be helpful to confirm the diagnosis, but this test is not commonly performed in a timely manner to assist in clinical decision-making process. Patients with long fasting period may have an increased risk, so you should consider adding an appropriate substrate carbohydrate intravenous fluids (4-8 mg / kg / h glucose).

When you are in the presence of P.R.I.S. it is necessary to:

- Immediately suspend the infusion of Propofol
- Cardiovascular stabilization
- Correct the lactic acidosis

In addition, to speed the elimination of propofol and its metabolites it is necessary to perform hemodialysis or hemofiltration.

Conclusions and considerations

The syndrome is often described as the unmasking of a subclinical mitochondrial disease or the aggravation of mitochondrial dysfunction following oxidative stress of surgery under general anesthesia.

Propofol infusion syndrome in susceptible patients is often fatal and must be urgently treated with the immediate suspension of the infusion of Propofol, the stabilization of the cardio-circulatory function, the treatment of lactic acidosis and, most importantly, the speedy removal of Propofol and its catabolites.

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