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Original article

Ovarian Hiperstimulation Syndrome: incidence in a public service of assisted reproduction and literature review☆

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ABSTRACT

Introduction: The ovarian hyperstimulation syndrome (OHSS), although uncommon, is an important complication of assisted reproduction because of its morbidity and possible lethal outcome.
Objective: To verify the incidence of OHSS in public service of assisted reproduction and review the literature.
Method: A descriptive retrospective study of patients enrolled in the Assisted Reproduction Laboratory of Hospital Pérola Byington who had 15 or more oocytes retrieved during controlled ovarian stimulation cycle, period 2010-2012. A literature search was conducted in the databases Medline, Scopus and SciELO including articles indexed between 2010 and 2013.
Results: OHSS was observed in 17 cycles (1.9%) of 857 performed. The mean age was 33.2 years, with a mean of 21.6 oocytes retrieved and 11.5 mature oocytes. Hospitalization and ascites puncture was required in five cases. There was no fatal outcome. The literature suggests that methods used to predict the ovarian response help to prevent OHSS, as antral follicle count, serum estradiol and anti-mullerian hormone. Evidence indicates that stimulation with GnRH antagonist and triggering with GnRH agonist, with or without vitrification of embryos are safe strategies for patients with high risk for OHSS.

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Conclusion: The incidence of OHSS was found to be within the range of literature. Although none of the approaches for the prevention of OHSS is fully effective, the majority demonstrates a decreasing incidence in high-risk patients.

Síndrome de Hiperestímulo Ovariano: incidência em um serviço público de reprodução assistida e revisão da literatura

Palavras-chave:
Síndrome de hiperestímulo ovariano
Fertilização in vitro
Fármacos para a fertilidade feminina

RESUMO

Introdução: A Síndrome de Hiperestímulo Ovariano (SHO), apesar de pouco frequente, é complicação importante na reprodução assistida devido sua morbidade e possibilidade de desfecho letal.
Objetivo: Verificar a incidência da SHO em serviço público de reprodução assistida e revisar a literatura.
Método: Estudo descritivo retrospectivo com prontuários de pacientes matriculadas no Laboratório de Reprodução Assistida do Hospital Pérola Byington de 2010 a 2012, que apresentaram 15 ou mais oócitos aspirados durante ciclo de estimulação ovariana controlada. Consulta nas bases de dados do Medline, Scopus e Scielo incluindo artigos indexados entre 2010 e 2013.
Resultados: SHO foi verificada em 17 ciclos (1,9%) dos 857 realizados. A média etária foi de 33,2 anos, com média de 21,6 oócitos aspirados e 11,5 oócitos maduros. Internação foi necessária em cinco casos. Não houve desfecho fatal. A literatura aponta que métodos empregados para prever a resposta ovariana auxiliam na prevenção da SHO, como contagem de folículos antrais, dosagem de estradiol e hormônio anti-mulleriano. Evidências indicam que a estimulação com antagonista do GnRH e desencadeamento da ovulação com agonista do GnRH, com ou sem vitrificação de embriões, como estratégias seguras para pacientes com alto risco para SHO.
Conclusão: A incidência da SHO mostrou-se dentro da variação da literatura. Embora nenhuma das abordagens de prevenção da SHO seja totalmente eficaz, a maioria demonstra diminuição da incidência em pacientes de alto risco.

Introduction

The ovarian hyperstimulation syndrome (OHSS) remains a feared complication, both the patient and the physician using Assisted Reproduction Techniques (ART). The OHSS presents symptoms from mild to severe forms of abdominal discomfort leading to hospitalization, and, in some cases, including fatal outcome.[1]

The incidence of clinically significant OHSS is 2 to 3%. However, milder forms may develop up to 30% of patients undergoing ART.[2] The syndrome affects approximately 6,020 patients per year in the United States and Europe, with risk of death estimated between 1:450,000 and 1:500,000.[3,4]

The pathophysiology of OHSS is complex and not yet fully determined. However, it involves increased capillary permeability mesothelial surface of the ovaries and extravasation of protein-rich fluid in the third space.[5] Clinical manifestations reflect the extent of leakage and hemoconcentration resulting from intravascular volume depletion.

Signs and symptoms vary according to the severity of the syndrome. It might occur only mild discomfort and abdominal distension due to the increase in the volume of one or both ovaries. In more severe forms it can be observed the formation of ascites in varying degrees, pleural effusion and oliguria, renal failure and death may occur as a result of hemoconcentration and reduced perfusion of other organs such as kidneys, heart and brain.[6,7]

Two types of OHSS are identified. The early onset one, which is associated with the response after ovarian stimulation, is usually self-limited if no pregnancy occurs. The delayed form develops in ten days or more after conception, and in many cases require hospitalization.[8,9]

Several studies indicate that the development of OHSS is mediated by the presence of human chorionic gonadotropin (hCG), exogenous or endogenous.[5] The administration of hCG would lead to an increased vascular permeability, mediated by the receptors of vascular endothelial growth factor (VEGF) present in the theca-cells and granulosa.[5,10,11] Prostaglandins, inhibin, mediators of the inflammatory system and activation of the renin-angiotensin-aldosterone system are also factors involved in the etiology of OHSS.[5,12]

Considering its importance, the objective is to determine the incidence of OHSS in a public service of assisted reproduction and review relevant publications on the topic with an emphasis on prevention.