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Case Report

# Adult Nesioblastosis: Case Report

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## Abstract

The authors relate a case of a adult male patient with persistent hypoglycemia, without a hyperfunctional tumor. The patient was submitted to a subtotal pancreatectomy, with good evolution and glicemic control.

**Key-Words**: Nesidioblastosis in adults, Persistent hypoglycemia

## Introduction

Nesidioblastosis was defined for the first time in 1938 by Laidlaw as a diffuse and disseminated proliferation of islet cells from the pancreatic ducts and ductules.

Nesidioblastosis is a hyperfunctional disorder of insulin-secreting pancreatic cells, characterized by hypertrophy of beta cells. This change causes persistent hyperinsulinemic hypoglycemia in neonates; in adults, hyperinsulinemic hypoglycemia is only exceptionally caused by nesidioblastosis and it is usually due to an insulinoma. Nesidioblastosis is also called diffuse hyperplasia, nesidiodysplasia, dysplasia of the endocrine cells, focal adenomatosis of the islets and congenital insulinoma.

Nesidioblastosis in adults rarely causes hypoglycemia and persistent hyperinsulinemia (PAHH) in the absence of an insulinoma, and only 10 cases of the pure form of nesidioblastosis not associated with other diseases have been reported in the world literature. The inappropriately high levels of blood insulin during sudden hypoglycemia in the absence of an insulin-secreting tumor suggests PAHH.

The authors of this article propose to report the histopathological characteristics of a case of isolated nesidioblastosis in an adult.

## Case Report

O.R.B., 36 years old, male, white, visited a medical service in January 2003, due to frequent episodes of weakness, tremors, coldness, paresthesia of the limbs and syncope in the previous three months. At the initial investigation, several exams were performed, and the following altered results were obtained: pro-insulin: 109.9 (RV: ⋆.5 to 42.0); C-peptide: 0.3 ng/ml (RV: 0.4 to 3.5ng/ml); fasting glucose: 18mg/dl (RV:70 to 110mg/dl).

Due to a fasting glucose level much lower than the acceptable limit, the patient was submitted to computed tomography (CT) of the abdomen because of a suspicion of some pancreatic abnormality. Although CT did not suggest a pancreatic lesion, diagnostic hypothesis was insulinoma. Two months after diagnosis. The first indication was research of insulinoma, for the patient had persistently low glicemia levels and negative preoperative image tests results. The patient was submitted

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to partial pancreatectomy by videolaparoscopy with no intraoperative ultrasound. Due to difficulties for locating the lesion, surgery was converted to laparotomy and a 0.5 cm diameter node was found in the tail of the pancreas, the node was removed and frozen sections were sent to pathology during surgery. The pancreatic tissue was preserved in paraffin and no lesion compatible with insulinoma was identified. The pancreatic tissue was cut in many slices and the lab identified hyperplasia of Langherhans islets.

On the fourth day after surgery, the clinical and laboratory condition improved and the patient was discharged from the hospital. Glucose levels varied from 70 to 80mg/dl.

Three days after discharge, the patient returned to the Emergency Room with the same complaints he had before surgery. Exams showed hypoglycemia (29mg/dl). The patient was submitted to duodenopancreatectomy (DPT) and about 80% of the pancreatic gland was removed. At macroscopy, the excised portion of the pancreas weighed 55.0g and measured 6.3x3.0x3.0cm, and no macroscopic lesion was seen. The pancreatic tissue was widely sampled, and about sixty histological sections were made and stained by the HE method. The histological sections showed pancreatic tissue with a significant increase in the number of β cell islets, with hyperplasia, attaining 20% of the total of the specimen examined. No circumscribed nodes were found. The findings were compatible with adult nesidioblastosis, also called diffuse islet cell hyperplasia.

The immediate postoperative period was quite favorable, and the glucose levels varied from 100 to 110mg/dl. A few days after surgery, the patient was discharged in good general condition, and is currently undergoing periodical follow-up at the Central Outpatient Clinic at the University of Caxias do Sul. He never again presented the symptoms he had before surgery.

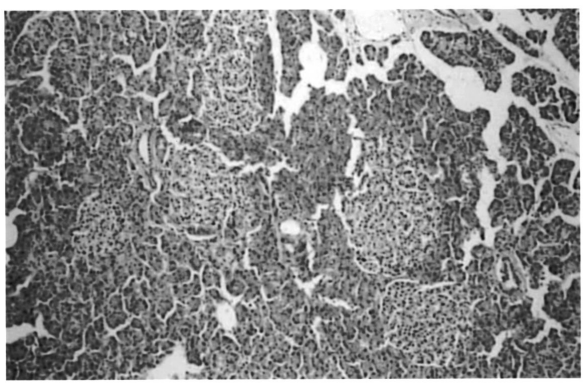

**Figura 1** - Photomicrograph of pancreas tissue with lots of Langherhans islets. (HE, 100x)

## Discussion

Nesidioblastosis was defined for the first time by Laidlaw, in 1938, as a diffused and disseminated islet cell proliferation from the pancreatic ducts and ductules.[1-5] In newborns and children, islet hyperplasia and nesidioblastosis are the most common causes of hyperinsulinemic hypoglycemia. In adults on the other hand, hyperinsulinemic hypoglycemia caused by nesidioblastosis is rare,[4-7] affecting only 0.5 to 7% of all cases of hypoglycemic hyperinsulinemia.[2] This illness is almost always the result of an islet cell tumor (insulinoma) and only 10 cases of the pure form of adult nesidioblastosis not associated with other diseases have been reported in the world literature.[4-5]

Clinically, the patient presented Whipple's triad: hypoglycemia symptoms, blood glucose levels below 50 mg/dl and symptom relief after glucose administration,[2,6] being the symptoms rather similar to those of insulinoma.[3] There are also other psychiatric symptoms related to hypoglycemia such as fatigue, mental confusion and visual disorders, triggered by stress and exercise. The symptoms usually begin in adulthood and rarely in adolescence.[1-2]

Nesidioblastosis in adults occurs in both males and females and at any age. The duration of hypoglycemia symptoms varies from a few days to six months before clinical diagnosis.[5]

Histological findings consist of hypertrophic islets, some of wich have pleomorphic nuclei, and increased numbers of islet cells budding off ducts complexes) or neoformation of islets from ducts. Individual islets contain cells with enlarged pelomorphic nuclei that are 1.5 to 2 fold larger than the normal islet cell nucleus. Pleiosis or a type of vascular ectasia of the islet with proeminently dilated vascular sinusoids may be observed.[1]

It is difficult to differentiate adult nesidioblastosis from an insulinoma preoperatively.[2-3] The diagnosis of the disease in almost 100% of the cases is performed postoperatively through a detailed histological study of the specimen.[3,5] Conventional X-rays are not very useful to distinguish an insulinoma from nesidioblastosis when tumor lesions are very small. Although nesidioblastosis should be considered when imaging studies do not locate pancreatic lesions, this is not a rule.[2]

The extent of surgical resection for adult nesidioblastosis is still controversial.[2-3,5] Most surgeons perform distal pancreatectomy,[2-3] while others prefer to perform almost total pancreatectomy (90% to 95% of the gland).[2] The excision of 60% to 80% of the distal pancreas leads to cure for about half the patients, without any need for medication.[2] According to Ueda et al.[4]

all patients with recurrences had pancreatic resections smaller than 80%.

The histopathological findings in the adult are not markedly different from the findings in the pancreas in the childhood form of the disease. All pancreatic tissues removed by organic hyperinsulinemia should be examined using the immunoperoxidase technique, with anti-insulin antibodies.[3]

Nesidioblastosis is an uncommon but clinically important cause of hypoglycemia in the adult population, and must always be considered in a patient with a presumptive preoperative diagnosis of insulinoma. This study indicates that a 70% distal pancreatectomy is often successful in controlling hypoglycemia, and rarely results in diabetes mellitus. However, the optimal treatment of this disorder remains to be determined.

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