

Ambulatory ophthalmological surgical program for insulin-dependent diabetic patients

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Abstract

Objective: Insulin-dependent diabetic patients scheduled for vitrectomy, under regional anesthesia were studied during the perioperative period in the ambulatory unit, with the aim of including these patients in our ambulatory surgery program. **Materials and Methods:** The patients underwent surgery early in the morning without having breakfast or their morning insulin dose. Following a continuous infusion of glucose 10% retrobulbar anesthesia was administered and vitrectomy performed. After surgery, breakfast was given in the recovery area and was followed by the recommended insulin dose. **Results:** Three men and nine women, ASA 2-3, with the median age of 66 were observed. Blood glucose levels were shown to be between 123 and 337 mg/dl. The insulin dose was individualized for each patient. The average stay in the recovery room was 138 min. One patient was nauseous, none were readmitted. No significant recorded parameter differences were found between these patients and non diabetic patients undergoing ambulatory ophthalmological surgery. **Conclusions:** Ophthalmological surgery for insulin-dependent diabetic patients, under retrobulbar anesthesia can be performed in an ambulatory setting. © 1998 Elsevier Science B.V. All rights reserved.

Keywords: Diabetes; Ambulatory anesthesia; Vitrectomy

1. Introduction

Metabolic alterations arise in all patients as a consequence of preoperative anxiety, tracheal intubation, post-operative pain and possible nausea and vomiting. Diabetic patients under insulin treatment have associated pathologies requiring surgery [1,2] which may be performed on an ambulatory basis. These patients may have serious complications such as hypoglycemia or ketoacidosis when they are discharged after an ambulatory operation. Due to these factors, insulin-dependent diabetic patients are not usually included in ambulatory surgery programmes in most hospitals. The diabetic patients scheduled for vitrectomy, under regional anesthesia, were studied during the perioperative period in the ambulatory unit, with the aim of including these patients in our ambulatory surgery program.

2. Materials and methods

A retrospective study with 12 insulin-dependent diabetic patients, scheduled for ocular surgery, was carried out from May 1996 to May 1997. Preoperatively the patients were admitted to the Endocrinology Service to adjust their insulin dose. The patients then underwent surgery first thing in the morning without having breakfast or their morning insulin dose. Following a continuous infusion of glucose 10%, retrobulbar anesthesia was administered and vitrectomy performed. After surgery, breakfast was given in the recovery area and was followed by the recommended insulin dose. The parameters recorded in the post-operative period were: blood glucose levels in the capillary blood vessels before breakfast finger (stick); nausea, vomiting or other complications; amount of time in the recovery room and the number of unexpected hospital admissions. Discharge was undertaken following the Aldrete criteria modified because of the ambulatory surgery.

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Table 1
Results

Age	43	63	63	62	66	73	54	54	71	62	75	75
Finger-stick mg/dl	315	192	157	166	174	383	130	244	185	337	333	123
Insulin	22	—	—	14	15	24	20	20	10	24	12	10
	MXT			NPH	NPH	NPH	NPH	MXT	NPH	NPH	NPH	NPH
											4	
											ACT	
Recovery (min)	130	130	200	140	135	140	240	120	85	130	185	130

MXT: Mixtard Insulin, ACT: Actrapid Insulin, min: minutes.

Obtained values in the 12 patients.

3. Results

Three men and nine women, ASA 2-3, with a median age of 66 years were observed. All patients were given retrobulbar anesthesia and vitrectomy was performed, without any complications occurring. Blood glucose levels were shown to be between 123 and 337 mg/dl, which are considered to be normal in this type of patient. The insulin dose was individualized for each patient. The average stay in the recovery room was 138 min. One patient was nauseous. None were readmitted. (Table 1). No significant recorded parameter differences were found between these patients and non diabetic patients undergoing ambulatory ophthalmological surgery in the same unit.

4. Discussion

Diabetes mellitus is one of the most frequent endocrine illnesses found in ambulatory surgery patients. Correct perioperative management of diabetes is very important to reduce any complications [3]. Surgery for insulin-dependent diabetic patients must be scheduled as early in the morning as possible. Subsequently, there are minimum alterations in glucose levels thus allowing oral intake to begin before discharge [4]. There are three life-threatening complications in diabetic patients: ketoacidosis, hyperosmolarity and hypoglycemia. These complications are more frequent using general anesthesia. The drugs used delay oral intake and there are higher levels of nausea and vomiting.

Maintaining blood glucose levels between 120 and 200 mg/dl is the chief aim. The most physiological

method would be through a continuous infusion of insulin and glucose. However, some studies have shown better results with subcutaneous insulin [5,6].

In short procedures or in those only requiring local or regional anesthesia, administering half or two-thirds of the normal insulin dose is recommended first thing in the morning followed by a glucose infusion. After surgery the patient is allowed to eat and the rest of the morning dose is then given.

In our center we do not administer the insulin until after surgery and breakfast. The dose given is two-thirds of patient's morning dose. We have not recorded any important post-operative problems.

In conclusion, ophthalmological surgery for insulin-dependent diabetic patients, under retrobulbar anesthesia, can be performed in ambulatory units. We consider these patients could be accepted for other minor operations under peripheral regional blocks.

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