As a possible cause of MODY subtypes 7–14, eight genes have been suggested: Kruppel–like factor.2.4 11 (KLF11); carboxyl ester lipase; paired–box–containing gene 4 (PAX4); insulin (INS); B–lymphocyte kinase; adenosine triphosphate (ATP)–binding cassette, subfamily C (CFTR/MRP) number 8 (ABCC8); potassium channel, inwardly rectifying subfamily J, member 11 (KCNJ11); adaptor protein, phosphotyrosine interaction, PH domain, and leucine zipper containing (APPL1) [27].For T3cDM, characteristic parameters include the following: rare ketoacidosis, mild hyperglycemia, common hypoglycemia, increased peripheral insulin sensitivity, decreased hepatic insulin Int.T3cDM is associated with pancreatic diseases, such as pancreatic carcinoma, acute and chronic pancreatitis, cystic fibrosis, pancreatectomy and others [23].PDX1 is a transcription factor that is involved in the exocrine and endocrine development of the pancreas and affects pancreatic development and expression of the insulin gene [19,26,27].Maturity–Onset Diabetes of the Young Maturity–Onset Diabetes of the Young (MODY) is characterized by the onset of hyperglycemia detected at an early age, before age 25 years, although diagnosis may happen at older ages.2025, 26, 542 4 of 50 sensitivity, insulin, glucagon, PP and GIP levels are low, and any typical age of onset [20].The glucokinase gene is involved in the regulation of the amount of insulin produced by the pancreatic ?–cells in response to blood glucose levels.NEUROD1 is a basic–loop–helix transcription factor associated with pancreatic and neuronal development.This DM is secondary to pancreatic disease, due to diseases of the exocrine pancreas [19].This type of MODY causes only minor changes in blood glucose levels, resulting in a rare development of diabetic complications [19,26,27].MODY is often inherited as an autosomal dominant disease, in which at least 14 genes on different chromosomes are involved.Six genes encode proteins which correspond to MODY subtypes 1–6 [19,27].Type 3c Diabetes Mellitus Type 3c diabetes mellitus (T3cDM) is also known as pancreoprivic or pancreatogenic diabetes.Approximately 0.11% of patients with diseases of the exocrine pancreas have DM [24].It decreases the amount of insulin produced by the pancreas, causing diabetes.T3cDM affects approximately 9.2% of diabetic patients [25].The most commonly diagnosed types are MODY 1, MODY 2 and MODY 3 which account for 95% of cases [19,26].MODY 1––Hepatic Nuclear Factor 4 ?MODY 3––Hepatic Nuclear Factor 1 ?It may be misdiagnosed as T1DM, although patients are autoantibody negative [19,26,27].MODY 5––Hepatic Nuclear Factor 1 ?It is important to recognize, because MODY 5 may cause kidney problems in the form of renal cysts [26,27].It is involved in maturation and maintenance of the pancreatic ?–cell [26,27].Neonatal Diabetes Neonatal diabetes is a diabetes that occurs before 6 months of age.It affects 1–2% of diabetic patients.There are different subtypes of MODY (MODY 1 to MODY 14).MODY 2––Glucokinase.This subtype of MODY accounts for 70% of cases of MODY.MODY 3 is often related to a very strong family history of diabetes.MODY 4––PDX–MODY.(HNF–1?) is a very rare form of MODY.MODY 6––NEUROD1–MODY.J. Mol.Sci.(HNF–4?) is similar to HNF–1 ?, which is much less .common [19,26,27].(HNF–1?).2.5.2.6