10 Swiss kindreds with multiple endocrine neoplasia type 1: assessment of screening methods

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PRINCIPLES: Multiple endocrine neoplasia type 1 (MEN1) is an autosomal dominant disease characterised by the combined occurrence of tumours of the parathyroid glands, the enteropancreatic neuroendocrine system and the anterior pituitary gland. The genetic defect has been mapped to the long arm of chromosome 11q13, and the MEN1-gene was recently identified by positional cloning. Genetic screening for MEN1 germline mutations allows the identification of gene carriers in affected kindreds. Biochemical and radiological screening for MEN1 tumours allows an earlier diagnosis and treatment, and, thus may reduce morbidity and mortality. Since there is no consensus about the frequency and the extent of the necessary screening investigations, evaluation of proposed screening programs is of importance.

METHODS: The aims of our study were to identify the MEN1-gene mutations and to detect the gene-carriers in 10 Swiss MEN1 families, as well as to assess biochemical and radiological screening methods. The study included 45 members from 10 MEN1 families.

RESULTS: Every family had a different type of MEN1-gene mutation. Thirty out of 45 family members were gene mutation carriers. Twenty-two MEN1-gene carriers had typical MEN1 tumours: parathyroid, enteropancreatic and pituitary tumours were found in 21, 14 and 1 patients, respectively. Applying a defined screening program the following manifestations in asymptomatic MEN1-gene carriers were detected: 9 primary hyperparathyroidism, 3 nonfunctioning pancreatic tumours, 1 gastrinoma, 1 nonfunctioning microadenoma of the pituitary and 1 macronodular adrenal hyperplasia.

CONCLUSIONS: The genetic screening facilitates the identification of individuals who carry MEN1-gene mutations, and allows one to exclude non-mutant gene carriers from further investigations. The prospective biochemical and radiological screening of gene mutation carriers allows the earlier detection of MEN1-associated tumours. Therefore, it might be expected that morbidity and mortality of the MEN1 could be reduced.