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Short Communication

Familial Breast Cancer: Clinical Services in the Netherlands

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EPIDEMIOLOGY: INCIDENCE, AGE AT DIAGNOSIS, FAMILIAL OCCURRENCE

The incidence of breast cancer in the Netherlands ranks among the highest in Europe. In 1995 9476 new cases were diagnosed. Age at diagnosis was < 40 years for 584 (6.2%) patients. About 10–15% of cases report a positive family history [1]. An increasing number of patients and family members is referred for genetic counselling, on the basis of young age at diagnosis and/or a positive family history.

ORGANISATION: THE FAMILY CANCER CLINICS

In the Netherlands eight clinical genetics centers were established in eight university hospitals (Groningen, Utrecht, Amsterdam (VU&UvA), Leiden, Nijmegen, Rotterdam, Maastricht). Genetic counselling is performed in these centers and, in addition, in two cancer hospitals (Amsterdam, Rotterdam). In "family cancer clinics" clinical and molecular geneticists, oncologists, and psychosocial workers cooperate using various forms of organisation. The number of registered clinical geneticists in the Netherlands is 62 (01-01-1999). Twelve clinical geneticists are (mainly) involved in cancer genetics. Genetics nurses, partly involved in cancer genetics, number 20 (April 1999). The number of referrals for cancer at the Amsterdam Family Cancer Clinic of the University Hospital Vrije Universiteit (1994–1997) is presented in Table 1.

CLINICAL EVALUATION: PEDIGREE STUDIES, DNA TESTING, RISK COUNSELLING

Clinical genetic evaluation includes a pedigree study and may include DNA testing. Cancer risk is based on clinical and DNA-based diagnosis. It is essential that pedigree studies include verification of the family history by review of clinical and histological data [2]. Empiric risk figures for individuals with a positive family history of breast cancer are generally based on the data of Claus et al. [3]. The indications for DNA testing include: 1) age at diagnosis of breast cancer < 35 years, 2) two first-degree relatives with breast cancer, mean age at diagnosis < 50 years, 3) three close relatives with breast cancer in two successive generations, at least one of them being < 50 years at diagnosis. The chance that a causative BRCA1 or BRCA2 mutation is present increases with younger ages at diagnosis, occurrence of bilateral breast cancer and occurrence of ovarian cancer [4]. About

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Table 1
Referrals for cancer, Amsterdam Family Cancer Clinic at the University Hospital Vrije Universiteit, 1994–1997

year	total number of referrals to the department of clinical genetics	referrals for cancer (% of total number of referrals)
1994	492	114 (23.2%)
1995	550	202 (36.7%)
1996	679	249 (36.7%)
1997	769	306 (39.8%)

Table 2
Pathogenic BRCA1 and BRCA2 mutations in breast/ovarian cancer families, the Netherlands, 01-01-1999

	number of families with a mutation	number of distinct mutations
BRCA1	347	56
BRCA2	70	38
total numbers	417	94

25% of the Dutch families subjected to DNA testing exhibit a pathogenic BRCA1 or BRCA2 mutation. The number of mutation-positive families and the subdivision of families with BRCA1 and BRCA2 mutations (01-01-1999) is presented in Table 2. Ten different BRCA1/BRCA2 founder and recurrent mutations account for 243 (58%) of the 417 BRCA1/2 mutation-positive families.

The costs for genetic counselling and DNA testing are covered by health insurance. "Complex genetic counselling" costs *f* 2493 ($ 1198, Euro 113l), DNA testing *f* 1190 ($ 572, Euro 540) (tariffs for Amsterdam per 01-01-1999, cost for DNA testing is given per gene: BRCA1 and BRCA2 testing costs *f* 2380 ($ 1144, Euro 1080)). It takes 3–6 months to perform standard DNA testing on BRCA1 and BRCA2. If a mutation is found in affected family members pre-symptomatic diagnosis takes another two months.

PREVENTION: SCREENING, PROPHYLACTIC SURGERY, FOLLOW-UP

In the Netherlands population screening for breast cancer consists of two-yearly mammography from 50–75 years of age. Intensive screening for individuals at increased risk of breast cancer includes monthly breast self-examination, physical examination by a surgeon every 6 months and yearly mammography. If a woman is a carrier of a pathogenic BRCA1 or BRCA2 mutation, the option of prophylactic surgery will be considered. At the University Hospital Vrije Universiteit in Amsterdam women at increased breast and ovarian cancer risk are investigated periodically at a clinic in which the surgeon, gynaecologist, geneticist and social worker evaluate the situation of the patient. Long-term follow-up of about 100 breast/ovarian cancer families is carried out by the national Foundation for the Detection of Hereditary Tumours (FDHT).

RESEARCH: GENES, PREVENTION, CARE

National research projects include a) the "GEO-HEBON" project on gene-environment interactions, b) a project on the role of MRI for breast screening. Local projects in Amsterdam include a study of the ATM gene in breast cancer (NKI) and evaluation of the psycho-social aspects of care.

CONSENSUS: WORKING GROUPS, MEDICAL SOCIETY, HEALTH COUNCIL

Consensus is reached by several national working groups: 1) a multidisciplinary national group on breast cancer (HEBON), 2) working groups on cancer genetics for clinical geneticists (WKO) and for molecular geneticists (LOD), 3) a multidisciplinary working group on gynaecological tumours (at the FDHT). Recommendations for DNA testing were drawn up by the Health Council of the Netherlands [5] and the committee on medical ethics of the Dutch Medical Society [6]. A national working group evaluates psychosocial care in cancer genetics.

Acknowledgement

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