Trophoblastic Tumors in Greenland*

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Summary. From 1950 through 1974, 37 cases of hydatidiform mole not followed by malignancy and 11 cases of invasively growing trophoblastic tumors (IGTT) occurred among indigenous Greenlandic women. The overall incidence of benign mole was 1:850 births, only slightly higher than most incidences in low-risk areas like Western Europe, North America, Australia, and Israel. In contrast, the overall incidence of IGTT, 1:2861 births, and the minimum incidence of histologically confirmed choriocarcinoma, 1:5245 births, are among the highest population-based incidences on record. A marked increase in incidence of both hydatidiform mole and IGTT was found late in reproductive life. A recent high incidence of mole among teenagers increased the incidence with statistical significance during the latest 10 years, whereas maximum incidence of IGTT was found in 1960–64. A strong association existed between hydatidiform mole and IGTT. During the study period Greenlandic women with mole had a 20% risk of developing IGTT and 64% of IGTT cases were preceded by molar pregnancy. Four cases of benign mole, but no case of IGTT, occurred among the small group of Danish women living in Greenland. The incidence, 1 mole:685 births, was higher than among the indigenous population, although the latter had a lower socio-economic status. The reason for the high occurrence of IGTT among indigenous Greenlanders remains unknown. The predominating HL-A 9 antigen could conceivably reflect a genetic predisposition.

Key words: Trophoblastic tumors – Eskimo – Greenland

Trophoblastic tumors are rare in Europe and North America (Brisson and Fabia, 1976; Kolstad and Hognestad, 1965; Mills, 1964; Mogensen and Olsen, 1972; Ringertz, 1970; Yen and MacMahon, 1968) but occur with high frequencies in parts of East Asia, India, Africa, the Caribbean and Mexico (Acosta-Sison, 1967; Chun

* This work has been supported by Sygekassernes Helsefond (Grant no. H 11/51–76)
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0171-5216/79/0095/0177/$ 2.00
et al., 1964; Junaid et al., 1974; Marquez-Monter et al., 1963; Pai, 1967; Reddy and Rao, 1969; Sengupta et al., 1977; Shanmugaratnam et al., 1971; Teoh et al., 1971, 1972, The Joint Project, 1959; Thorborg and Kim, 1964). In Greenland, Rønn (1973) in a short communication reported 30 trophoblastic tumors registered between 1960 and 1969 of which 7 were diagnosed as choriocarcinoma. The calculated incidence was 1 choriocarcinoma per 2473 pregnancies or approximately 20 times the incidence in Denmark. Diagnostic criteria and clinical aspects were not reported.

The aim of this paper is to elucidate the occurrence in Greenland of the three conditions connected with abnormal proliferation of chorionic epithelium, i.e., hydatidiform mole, invasive mole, and choriocarcinoma. The study covers the 25-year period from 1950 through 1974.

Material and Methods

Ethnically, indigenous Greenlanders are an Eskimo-Caucasian population in which studies of genetic markers reveal an average Caucasian admixture of 25-30% (Kissmeyer-Nielsen et al., 1971; Persson, 1970). This population group, the worlds largest of Eskimo descent, increased from 22,500 in 1950 to 40,000 in 1974, all living along the coast. The population group of non-Greenlanders, mainly Danes, increased over the same period from 1000 to 9500 with a male predominance. The country is divided into 16 medical districts each of which has a smaller or larger hospital. In addition, a central referral hospital established in 1957, is located in the capital Godthåb. The medical facilities and the population structure have been described in more detail in previous publications (Nielsen et al., 1977, 1978).

Records of all patients with a trophoblastic disease diagnosed during the 25-year period from 1950 to 1974 were reviewed for medical and demographic information. Data on inpatients and outpatients were obtained from the files of all districts hospitals and supplemented by pathology and autopsy reports, death certificates, data from the Danish Cancer Registry, files at the Ministry for Greenland in Copenhagen, and files from referral centers in Denmark. Vital statistical data, including the annual number of live births and still births by maternal age and race, were obtained from the Statistical Office, Ministry for Greenland, Copenhagen. The number of live births equals the number of live-born infants since information on multiple pregnancies were only available for part of the study period. Statistics on medically treated spontaneous abortions and legally performed abortions were available only from 1960 onwards and did not include distribution by age or race.

To exclude erroneous diagnosis, especially in cases of syncytial endometritis, placental polyp, molar residue or abortion residue, tissue blocks were recut and slides reexamined of all cases diagnosed histologically between 1959 and 1974 with the exception of hydatidiform moles not followed by malignancy. As histologic material was not available prior to 1959, cases diagnosed during 1950–1958 were reclassified based on the original, detailed histologic descriptions.

The criterion used for the microscopic diagnosis of choriocarcinoma in hysterectomy specimens and metastatic deposits was a bilaminal arrangement of invasively growing malignant trophoblasts often associated with haemorrhagic necrosis but without the occurrence of chorionic villi (Hertig and Mansell, 1956). The two types of trophoblasts should always be present. In curettage material the diagnosis of choriocarcinoma was made if the scrapings, in the absence of villi, consisted entirely of abundant malignant trophoblastic tissue with both cell types present.

Invasive mole was diagnosed when molar villous structures were located inside myometrial vessels or when masses of malignant trophoblasts containing chorionic villi were found in metastatic deposits. Cases originally diagnosed as choriocarcinoma, or invasive mole, but without histologic confirmation, were reassessed and those based on convincing clinical, hormonal, and radiologic evidence were included in this study as invasively growing trophoblastic tumors (IGTT) without subspecification.

Results

From 1950 through 1974, 37 cases of hydatidiform mole not followed by malignancy and 11 cases of invasively growing trophoblastic tumors (IGTT) occurred