Benign Tumors: Chorangiosis

Angiomas

With rare exceptions, vascular tumors are the only benign tumors of the placenta. Tumors designated chorioangiomas, chorangiommas, fibroangiomyxomas, fibromas, and the many other names that have been applied in the past are essentially similar, relatively common neoplasms of the placenta. Three large reviews have been published that bring together most of the literature. DeCosta et al. (1956) found about 250 case reports and listed all the synonyms applied previously. They also made reference to the frequency of hydramnios and associated fetal angiomas. Fox (1967), who also reviewed the often confusing nomenclature, indicated that Clarke described the first such tumor in 1798. Since then, the review by Siddall (1924) encompassed 130 cases, that by Marchetti (1939) comprised 209 cases, and Fox traced another 127 cases. Fox accounted for 344 published cases and gave incidence figures of 1 in 9,000 to 1 in 50,000 placentas. When careful study of placentas is undertaken, the real prevalence may be as high as 1 in 100 pregnancies, according to some authors, although in our experience this number is excessive. Wallenburg (1971) provided 13 new cases and summarized publications between 1939 and 1970. His reported incidence in consecutively collected placentas was 1 in 117. These authors provided an extensive literature documentation that would be redundant to repeat. Soma et al. (1991) found that the tumor existed in 0.2% of placentas in Japanese women but was more common (2.5–7.6%) in the high-altitude population of Nepal. This figure is similar to the higher frequency of chorioangioma observed in placentas of women living at altitude by Reshetnikova et al. (1996). We have seen chorioangiomas associated with chronic vascular thrombi and elevated nucleated red blood cells (NRBCs) in the fetal circulation. Thus, an hypoxic stimulus is inferred to lead to excessive villous capillary proliferative stimulation. While still speculative, such angiogenesis may well be regulated by such vascular growth factors as demonstrated to occur in the placenta by Jackson et al. (1994). A more detailed consideration of the placental villous adaptation to hypoxia can be found in the contribution by Kaufmann et al. (1993).

The typical chorioangioma is composed of fetal blood vessels that are usually supported by only scant connective tissue. The tumors often bulge on the fetal surface of the placenta (Figure 24.1). When they are embedded in the villous tissue, they are located closer to the fetal surface (Figure 24.2). The vessels comprising this tumor may be capillary or sinusoidal (Figure 24.3). Frequently, the stromal component is abundant, and the lesion resembles a fibroma (Figure 24.4). When Wharton’s jelly-like material participates in formation of the tumor, the appearance is that of a myxomatous neoplasm. The latter is particularly frequent when a chorioangioma arises near the base of the umbilical cord (Figures 12.63 and 12.64). In such cases, a mucicarmine stain reveals the presence of mucus (Dunn, 1959). Chorioangiomas are invariably covered by trophoblast; one may envisage them to be the proliferation of fetal capillaries of a villus whose surface thus expands (Figures 24.5, 24.6). The tumors often have degenerative changes, calcification, infarcts, and thromboses, which may leave hemosiderin behind (Dunn, 1959). At times, thrombosis and infarction are clinically manifest with cessation of maternal symptomatology, such as the frequent hydramnios that is associated with these lesions. Chazotte et al. (1990) observed such a lesion sonographically in a fetus who also had meconium peritonitis; when the chorangiomma shrank there was some improvement of the hydramnios. The 5-cm chorangiomma in the 620-g placenta had focal infarcts. Hsieh and Soong (1992) challenged this report and presented a larger lesion with hydrops. It would now be possible to laser-fulgurate the vessels that supply symptomatic chorioangiomas and thus treat the hydrops fetaalis at its root cause.

Chorioangiomas may be small and multiple (Figure 24.7); alternatively, they may constitute large masses that displace villous tissue and bulge on the fetal surface. They
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**Figure 24.1.** Typical chorioangioma (left), bulging on the fetal surface. Fetus and pregnancy were normal; there is slight circumvallation of the placenta at right.

are fleshy, dark, often congested, and invariably benign. Previous authors, impressed with mitoses and the great cellularity of some tumors, suggested that occasional chorioangiomas represent sarcomas. Metastases and true invasion, however, have never been seen. Cary (1914) considered his case of “sarcoma” to be “well authenticated,” but he did not provide photographs. Moreover, mother and infant did not suffer any known deleterious consequences from the 6.5 x 4.0 x 3.0 cm, focally calcified tumor.

The tumors labeled haemangioendothelioblastomas by Williams (1921) were apparently benign. Variability of the histological appearance, often within the same tumor, has confused many authors. Capillary, cavernous, endotheliotomatous, fibrosing, and fibromatous tumors have been included in the nomenclature suggested by Schulz-Hetzel (1978). We believe that such precision is unwarranted because the clinical outcome is almost always the same, and it depends more on the size of the mass(es) than on the composition of the tumor(s). One may regard these tumors as hemangiomas or as hamartomas. The latter designation, however, probably is unwarranted as other placental elements (e.g., trophoblast) never participate in their composition. This would be expected if the designation hamartoma were to apply, a point amply discussed by Marchetti (1939). This nomenclature was also examined in some detail by Barry et al. (1951) in a discussion of angiomas of cord and placenta. They ruled out that the lesions represent hamartomas and supported a neoplastic etiology.

It is theoretically possible to differentiate between a neoplasm or malformation-like tumor (hamartoma) with some precision. Linder and Gartler (1965) found, when they investigated leiomyomas of the uterus using glucose-6-phosphate dehydrogenase (G-6-PD) variants as markers in the frequently (15%) heterozygous Black population, that a single-cell origin was the rule for these neoplasms. The same was found to be true for most other tumors. “Congenital” tumors such as neurofibromas, on the other hand, had multiple cell derivation. They represent a malformation or hamartoma-like type of lesion. A study of chorioangiomas using this simple technique could be decisive in differentiating hamartoma from “true” neoplasm in females with G-6-PD heterozygosity.

The relation of chorioangioma to hydramnios has been known at least since Siddall’s extensive review in 1924.

**Figure 24.2.** Partially infarcted, 1-cm chorioangioma underneath the chorionic surface of an otherwise normal, mature placenta. It had a golden-yellow appearance and could easily have been mistaken for an infarct.