tumor predominantly affecting older men. Though related by name to seminoma, spermatocytic seminoma is a distinctive tumor both clinically and histologically. Spermatocytic seminoma is uncommon, representing 1% to 2% of all testicular germ cell neoplasms. The age of involvement is much later than for most testicular tumors: Affected individuals are generally older than age 65 years. Becuase it is a slow-growing tumor that does not produce metastases, the prognosis is excellent.

MORPHOLOGY

Spermatocytic seminoma tends to have a soft, pale gray, cut surface that sometimes reveal mucoid cysts. Spermatocytic seminomas contain three cell populations, all intermixed: (1) medium-sized cells, the most numerous, containing a round nucleus and eosinophilic cytoplasm; (2) smaller cells with a narrow rim of eosinophilic cytoplasm resembling secondary spermatocytes; and (3) scattered giant cells, either uninucleate or multinucleate. The chromatin in some intermediate-sized cells is similar to that seen in the meiotic phase of nonneoplastic spermatocytes (spireme chromatin). In contrast to typical seminomas, spermatocytic seminomas lack lymphocytes, granulomas, syncytiotrophoblasts, extra-testicular sites of origin, admixture with other germ cell tumors, and association with ITGCN.

Embryonal Carcinoma

Embryonal carcinomas occur mostly in the 20- to 30-year age group. These tumors are more aggressive than seminomas.

MORPHOLOGY

Most primary tumors are smaller than seminoma and do not replace the entire testis. However, extension through the tunica albuginea into the epididymis or cord frequently occurs. On cut surfaces the tumor is often variegated, poorly demarcated at the margins, and punctuated by foci of hemorrhage or necrosis (Fig. 21-25). **Histologically the cells grow in alveolar or tubular patterns, sometimes with papillary convolutions** (Fig. 21-26). **More undifferentiated lesions may display sheets of cells.** Well formed glands are absent. The neoplastic cells have an epithelial appearance, are large and anaplastic, and have hyperchromatic nuclei with prominent nucleoli. The cell borders are usually indistinct, and there is considerable variation in cell and nuclear size and shape. Mitotic figures and tumor giant cells are frequently seen. Embryonal carcinomas share some markers with seminomas such as OCT 3/4 and PLAP, but differ by being positive for cytokeratin and CD30, and negative for KIT.

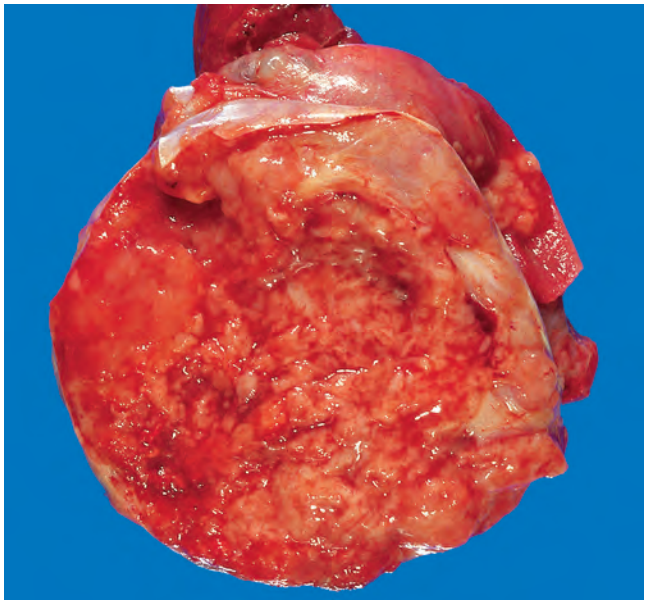

Figure 21-25 Embryonal carcinoma. In contrast to the seminoma illustrated in Figure 21-23, embryonal carcinoma is a hemorrhagic mass.

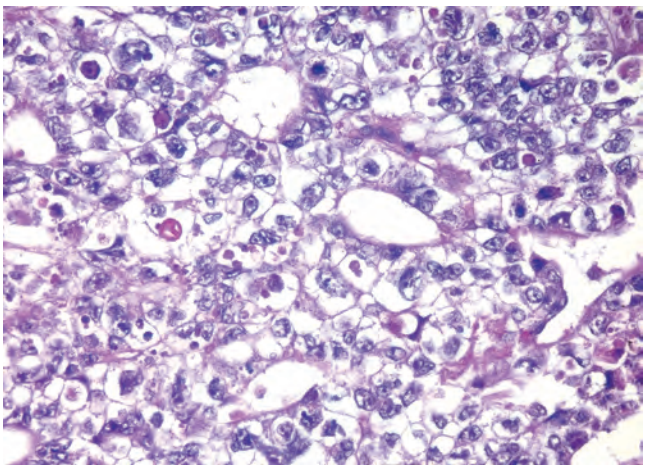

Figure 21-26 Embryonal carcinoma shows sheets of undifferentiated cells as well as primitive glandular differentiation. The nuclei are large and hyperchromatic.

Yolk Sac Tumor

Also known as *endodermal sinus tumor,* yolk sac tumor is of interest because it is the most common testicular tumor in infants and children up to 3 years of age. In this age group it has a very good prognosis. In adults the pure form of this tumor is rare; instead, yolk sac elements frequently occur in combination with embryonal carcinoma.

MORPHOLOGY

These tumors are nonencapsulated and have a homogeneous, yellow-white, mucinous appearance. They are composed of a lacelike (reticular) network of medium-sized cuboidal or flattened cells. In addition, papillary structures, solid cords of cells, and a multitude of other less common patterns may be found. In approximately 50% of tumors, structures resembling endodermal sinuses (**Schiller-Duval** bodies) may be seen; these consist of a mesodermal core with a central capillary and a visceral and parietal layer of cells resembling primitive glomeruli. Present within and outside the cytoplasm are eosinophilic, hyaline-like globules in which α-fetoprotein (AFP) and α_1-antitrypsin can be demonstrated by immunocytochemical staining. The presence of AFP in the tumor cells is highly characteristic, and underscores resemblance to yolk sac cells.