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Eosinophilic Cholecystitis

Eosinophilic cholecystitis is described as acute acalculous cholecystitis associated with infiltrations of eosinophils into the gallbladder wall. Acalculous cholecystitis is a rare condition in children. It occurs during the course of infectious disease, as well as in children on total parenteral nutrition, after surgery, trauma and extensive burns. The etiology of acalculous cholecystitis includes decreased blood flow to the gallbladder, biliary tract obstruction and hyperconcentration of the bile. The disease can progress to necrosis or perforation of the gallbladder. Eosinophilic cholecystitis (EC) is very rare, reported in 0.5-6.5% of removed gallbladders. The etiology of eosinophilic cholecystitis is unknown and probably represents a hypersensitivity type of inflammatory response to altered bile. Histologic findings diagnostic of eosinophilic cholecystitis includes transmural infiltration of leukocytes with more than 90% eosinophils present. Known causes of eosinophilic cholecystitis include parasitic infestation (Clonorchis sinensis, Echinococcus and Ascaris lumbricoides), gallstones, allergies, reaction to certain medications (erythromycin, L-tryptophan and cephalosporins), allergic granulomatous vasculitis, and association with eosinophilic gastroenteritis and/or eosinophilic pancreatitis. Gallstones can be found in almost 90% of the eosinophilic cholecystitis cases. Eosinophilic cholecystitis is more common in adult females between the ages of 25-64 years. In children, most cases occur during teenage years, though patient as young as seven years of age has been reported. Symptoms of eosinophilic cholecystitis resembles those of acute cholecystitis, including pain in the upper right quadrant, fever, jaundice, Murphy positive sign, altered mental status, shock, leukocytosis and postprandial nausea and vomiting. Eosinophilic cholecystitis can be diagnosed only on resection of the gallbladder and histologic examination. The diagnosis can be suspected if there is evidence of peripheral eosinophilia which occurs in 10-15% of cases. Ultrasound of the abdomen shows features of calculus cholecystitis with pericholecystic fluid collection and edema, thickened gallbladder wall and dilated common bile duct. The treatment of choice of eosinophilic cholecystitis is removal of the sick gallbladder. Cases associated with eosinophilic gastroenteritis or cholangitis, can benefit from steroids medication as adjuvant therapy. Eosinophilic cholecystitis usually shows a good prognosis and patients with cholecystitis alone improve after cholecystectomy.

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Ovarian Harvest

With the advent of newer therapeutic options and increase in intensity of such therapy more than 80% of children diagnosed with cancer will be long-term survivors. During management for cancer children will suffer long-term adverse effects such as loss of fertility. Treatment protocols highly deleterious for ovarian function include high dose alkylating agents (cyclophosphamide and busulfan), total body irradiation and abdominopelvic irradiation (5-20 Greys) that includes both ovaries. Ovarian damage is drug- and dose-dependent and increases with age at treatment. For prepubertal females, ovarian harvest using tissue cryopreservation is currently the only available means of potentially preserving gonad function and fertility. Ovarian tissue harvesting can take place immediately before intensive chemotherapy or irradiation. Ovarian tissue is collected during the removal of a primary abdominal tumor, or by means of a small suprapubic laparotomy or laparoscopy. A single ovary or 2/3 of each ovary is removed for cryopreservation. Most cases of major bleeding requiring transfusion or re-operation are associated with partial oophorectomy. Since the ovary can be different in the number of follicles present, some people prefer specimen collection from both ovaries. During the surgical procedure it is also possible to move residual gonads in order to reduce effects of local therapy (ovarian transposition). The preserved ovary is frozen down to liquid nitrogen temperature. Using a biopsy of the cortex of the removed ovary the number of primordial and primary follicles per square mm is determined. Also, in all malignant cases small samples of gonadal tissue are also sent for routine pathological assessment to rule out any gonadal involvement by the primary cancer. Ovarian tissue is preserved until the child recovers and it is reimplanted. Primordial follicles can be isolated from cryopreserved ovarian tissue and grown to maturity in vitro to be utilized for in vitro fertilization and embryo transfer. Orthotropic sites of reimplantation are the residual ovary or a peritoneal pocket in the ovarian fossa that permit a spontaneous pregnancy which is not recommended in case of pelvic irradiation. Heterotrophic sites are the subcutaneous forearm or abdominal tissue. Ovarian tissue transplant, whether orthotopic or heterotopic, would allow for ovarian hormonal production and restoration of a normal hormonal milieu allowing future pregnancy. Orthotropic ovarian reimplantation has led to the birth of more than 130 healthy babies. Mature oocyte and embryo cryopreservation is an appropriate strategy for fertility preservation in postpubertal females. Oocytes can be collected by transvaginal oocyte pick up, from excised ovarian tissue or a combination of both procedures. However, this approach is time consuming with a low pregnancy rate and does not replace ovarian tissue transplantation.

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Minimally Invasive Follicular Thyroid Carcinoma

Papillary and follicular thyroid carcinomas are considered the two differentiated carcinomas arising from follicular cells most commonly found in children. Papillary thyroid carcinoma accounts for more than 95% of all cases. Follicular thyroid carcinoma (FTC) accounts for less than 5% of all cases, occur more commonly in females, and is characterized by capsular and vascular invasion precluding making a categorical diagnosis using fine needle aspiration (FNA) biopsy. FNA biopsy usually describes a follicular tumor, and the child undergoes removal of the affected lobe with the tumor. FTC is known to be associated with TSH elevation, iodine deficiency areas, hemiagenesis and radiation exposure. Tumor size of pediatric FTC is significantly larger than in adult FTC. Histology of pediatric FTC is classified into five patterns: microfollicular, follicular, solid/trabecular, oncocytic and mixed patterns. Microfollicular pattern is the most common, while solid/trabecular the rarest. In FTC, RAS mutation is the most common genetic alteration with a prevalence in children of 12%. RAS mutation is associated with smaller tumor size with a potential low risk behavior in children. Follicular thyroid carcinoma can be further divided into minimally invasive and widely invasive. Minimally invasive FTC is diagnosed histologically when microscopic penetration of the tumor capsule is found but there is no vascular invasion. Minimally invasive FTC is difficult to diagnose prior to thyroidectomy unless distant metastases to bone or lung and/or lymph nodes have been detected and diagnosed by FNA or further imaging. Definitive diagnosis is established after hemithyroidectomy. Minimally invasive FTC is an encapsulated neoplasm characterized by unequivocal capsular invasion with a relatively uneventful and indolent course. Minimally invasive FTC carries an excellent prognosis with low risk of recurrence or disease-specific mortality. Removal of the affected lobe and five-year ultrasound-guided observation is sufficient therapy. Widely invasive FTC is more aggressive, shows a widespread infiltration of blood vessels into the adjacent thyroid parenchyma, displaying a poorer prognosis than minimally invasive variant. Completion total thyroidectomy as a second surgery and radioactive iodine ablation is recommended for invasive FTC. Poor prognostic factors associated with follicular thyroid

carcinoma include older age, distant and neck metastasis. Children with tumor exceeding 4 cm in length and associated with vascular invasion carries a poorer prognosis.

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