that paternal age would seem to lead to an increased contribution to triploid conceptions. This could also play some role in triploid-diploid mixaploid individuals. This article is an excellent review of current knowledge pertaining to diploidy, aneuploidy, and disomy in the sperm of males of various ages and in various chromosomally determined clinical conditions.

Judith G. Hall, OC, MD

New Syndrome of Hyperinsulinism and Hyperammonemia

Although there are many causes of hypoglycemia, a new syndrome associating hyperinsulinism with hyperammonemia was recently described (Zammarachi, et al. *Metabolism* 1996:45:957; Weinzimer, et al. *J Pediatr* 1997:130:661; Stanley, et al. *N Eng J Med* 1998:338:1352). This syndrome is identical or closely related to the leucine-sensitive hypoglycemia syndrome and is congenital in origin. Clinical manifestations are usually observed in neonates and/or infants. The diagnosis of patients with HSS is crucial as therapy differs radically, medical and not surgical, from that of other hyperinsulinemic patients. A positive response to diazoxide- and/or leucine-free diet is usually observed. All but one of the 12 patients in the article by De Lonlay had at least a partial response to diazoxide.

Genetically all 12 cases studied seem to be new mutations, as they occurred sporadically without family histories. This mutation results in a gain of function in the glutamate dehydrogenase gene (GLUD1). It also results in a decreased inhibitory effect of guanosine triphosphate on the enzyme. It has been suggested that the elevated oxidation of glutamate to á-ketoglutarate stimulates insulin secretion by increasing the ATP/ADP ratio in the pancreatic Beta cell, although this is unproven. All 12 patients studied had mutations located within or outside the GTP binding site, without any correlation between phenotype and genotype. The mutations in the GLUD1 gene are found in exons 6, 10, 11, and 12, which includes the antenna region of the enzyme and the GDP binding domain.

In a review of hyperinsulinemic patients by the authors in their institution over the past 20 years, plasma ammonia concentrations were measured in 71 (45 neonates and 26 infants) and hyperammonemia was found in 12 of the 71. The incidence of this type of hypoglycemia is significant. The authors conclude that ammonia concentrations should be measured in every patient investigated for hyperinsulinism and that, conversely, hypoglycemia should be looked for in all patients with unexplained hyperammonemia.

De Lonlay P, et al. *Pediatr Res* 2001;50:353-357.

Editor's Comment: *Heterogeneity is the name of the game, and molecular techniques allow us to recognize many of the reasons for heterogeneity. Within heterogeneity, many new biochemical pathways and mechanisms of disease are being identified. As in the case of this syndrome, different types of therapy become most appropriate.*

Judith G. Hall, OC, MD

15 Years After Chernobyl: New Evidence of Thyroid Cancer

A striking increase in childhood thyroid cancer was reported after the Chernobyl accident. Because proper dosimetry was not done at the time, the exact amount of exposure to children was not clear. The children who attended school within a 150 km radius of Chernobyl have been carefully screened over the ensuing 14 years. The nuclear power plant accident happened on April 26, 1986. One case of thyroid cancer was recorded per 2,409 children born between April 27, 1986 and December 31, 1986, (intrauterine exposure). A much higher rate, with 31 thyroid cancers among 9,720 children (ages 1 day – 4 years), was seen in those born in the 4 years prior to the accident. Over 20,000 children have been followed and repeatedly examined using ultrasound, as well as measurements of TSH, free thyroxine and thyroid peroxidase antibodies. An increase in thyroid cancer has not been seen in children born since 1987 (post Chernobyl conceived). All of the cancers were papillary adenocarcinomas.

Shibata Y, et al. *Lancet* 2001;358:1965-1966.

Editor's Comment: *The conclusion of this follow-up study is that children at a young age and probably up until 10 years of age are at particularly high risk for developing thyroid cancer after exposure to radioactive fallout. Hopefully, there will never be another Chernobyl. If there is, careful dosimetry to know the amount of exposure and the rapidity of decay will be important. However, it is clear that children, particularly young children, are at the greatest risk and need to be followed carefully.*

Judith G. Hall, OC, MD