Transient neonatal iatrogenic hypothyroidism due to iodinated contrast

Härenstam Ulrika¹, Reims Annika¹, Hafström Ola²
¹ Dept of Pediatric Endocrinology ² Dept of Neonatology, both at Queen Silvia Children’s Hospital, Sahlgrenska University Hospital, Gothenburg

Introduction
Iodine is necessary for thyroid hormone synthesis, but when exposed to large quantities, iodine may have an inhibitory effect on hormone synthesis leading to hypothyroidism, known as the Wolff-Chaikoff effect. We identified three cases of suspected iatrogenic hypothyroidism in preterm newborns who had been given iodine contrast during intestinal x-ray.

Method
Thyroid function was monitored in infants with gestational age ≤ 36 weeks at birth and exposed to iodinated contrast via the GI tract before 40 gestational weeks. 32 patients with elevated TSH (thyroid stimulating hormone) and prolonged GI (gastrointestinal) passage time were identified during 2012-2017.

Results
32 patients (44%) had increased TSH levels after iodinated contrast exposure (9.2-484 mU/L, ref 1.9-8.8 mU/L). Six patients (8.3%) had both elevated TSH, and decreased f-T4 (thyroxine). Mean TSH was 53.6 mU/L. TSH was spontaneously normalized after mean 19 days in 7 infants who were not given levothyroxine treatment. In 8/11 (73%) infants who were given levothyroxine, TSH was normalized during treatment.

Conclusion
We found elevated TSH levels in preterm infants after exposure to iodinated contrast via the GI tract. Both prematurity and prolonged exposure time to iodine may be risk factors for iodine induced hypothyroidism. Even though this condition seems to be transient in most cases, follow-up studies are needed, especially investigations of cognitive outcome of these children.

We suggest investigation of thyroid function in preterm infants before and after exposure to iodine containing contrast solutions.

Reference