

氟骨症患者血清 T₄、T₃、TSH含量变化探讨

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氟是维持人类健康所必需的微量元素之一，在自然界广泛分布，活性强。机体各组织中以骨和软骨含量最多，软组织含量较少，其中以甲状腺、肾脏含量为高^(1·2·3)。氟中毒时，主要病变发生在骨，但是其它脏器也有不同程度的损伤^(4·5)。早在1866年，Maumune就报告饮用高氟水使狗甲状腺肿大⁽⁵⁾。很多报告指出，氟可影响甲状腺功能的多个环节，包括干扰甲状腺摄碘、抑制甲状腺激素合成，降低甲状腺分泌等，并可引起甲状腺滤泡内储存的胶体量增多，上皮细胞萎缩性改变^(4·6·7)。然而，也有人报告氟中毒时用甲状腺机能和形态不发生影响。为了进一步研究氟与甲状腺功能的关系，我们在贵州省毕节县地方性氟中毒病区选择部分确诊为氟骨症的病例，检查其甲状腺大小，测定其血清T₄、T₃、TSH水平及尿碘含量。另选该县非氟中毒病区的居民作对比研究。

对象与方法

氟骨症组：27例，长期（20年以上）生活在毕节县氟中毒重病区，均有色素型或缺损型氟斑牙，骨骼变形和骨运动障碍，尿氟为10.66±2.20ppm，经骨X线检查和临床检查诊断为氟骨症。

非氟中毒组，20例，生活在该县非氟中

毒病区，无氟斑牙，无骨骼变形和骨运动障碍，尿氟为2.24±1.03ppm，经临床检查排除氟中毒。

两组均清晨空腹取静脉血，用PEG放射免疫方法测定血清T₄、T₃含量，用双抗法测定血清TSH含量。用苦味酸法和碱性灰化法分别测定尿肌酐和尿碘，计算微克碘/克肌酐含量。检查两组各例甲状腺大小。

结果

一、血清T₄测定值

氟骨症组血清T₄为7.49±2.17ug/dl，非氟中毒组为9.93±3.66ug/dl（表1）。氟骨症组T₄值低于非氟中毒组（P<0.05），两组间差异有显著性意义。

表1 氟骨症组与非氟中毒组血清T₄测定值

例数	血清T ₄ (ug/dl) M±S.D
氟骨症组 27	7.49±2.17
非氟中毒组 20	9.93±3.66
两组比较	t=2.56 P<0.05

二、血清T₃测定值

氟骨症组血清T₃为102.07±37.00ng/dl，非氟中毒组为110.80±28.70ng/dl（表2），两组相比差异无显著性意义（P>0.05）。

表2 氟骨症组与非氟骨症组血清T₃测定值

例数	血清T ₃ (ug/dl) M±S.D
氟骨症组 27	102.±31.70
非氟中毒组 20	110.80±29.44

两组比较: $t=1.31$ $P>0.05$

三、血清TSH测定值

氟骨症组血清TSH为 $11.39 \pm 4.57 \mu IU/ml$,非氟中毒组为 $5.21 \pm 2.8 \mu IU/ml$ (表3)。氟骨症组TSH值明显高于非氟中毒组($P<0.01$),两组间差异有高度显著性意义。

表3 氟骨症组与非氟中毒组血清TSH测定值

例数	血清TSH($\mu IU/ml$) M±S.D
氟骨症组 16	11.39±4.57
非氟中毒组 16	5.21±2.68

两组相比: $t=4.51$ $P<0.01$

四、尿碘含量

氟骨症组尿碘为 162.70 ± 48.70 微克碘/克肌酐,非氟中毒组为 160.14 ± 54.90 微克碘/克肌酐,两组尿碘含量接近,差异无显著性意义(表4)。

表4 氟骨症组与非氟中毒组尿碘含量

例数	尿碘($\mu g/g$ 肌酐) M±S.D
氟骨症组 22	162.70±48.70
非氟中毒组 15	160.14±54.90

两组比较: $t=0.692$ $P>0.05$

五、甲状腺大小检查

氟骨症组甲状腺扪诊仅4例有生理肿大其余甲状腺大小正常。非氟中毒组甲状腺大小完全正常。

讨 论

本项研究发现,氟骨症组血清T₄水平低

于非氟中毒组($P<0.05$)。毕节县居民普遍食用加碘盐,而且两组的尿碘含量不低,可以排除食物缺碘对甲状腺的影响。氟骨症组血清T₄水平低于非氟中毒组,乃是血清中高浓度的氟对甲状腺机能的影响所致,与Kendall-Taylor Rantanen等的报告相符⁽⁵⁾。氟骨症组血清T₃与非氟中毒组比,两组间差异无显著性意义($P>0.05$)。这种情况可能由于本项研究的氟骨症患者中,氟对其甲状腺功能的影响尚未达到相当严重程度,因而未明显降低;或者是由于T₄降低,T₄在外周组织中转化为T₃,代偿性增高的结果。血清T₄降低,可反馈性刺激TSH分泌增加,在TSH的长期刺激下,甲状腺可增生肿大。本项研究中,氟骨症组血清TSH明显高于非氟中毒组($P<0.01$)但在氟骨症组中经临床检查却未见有明显的甲状腺肿大。据文献报告,氟化钠可使甲状腺腺苷酸环化酶的活性降低,cAMP生成减少,因为抑制了TSH对这一过程的刺激作用^(10,11)。Willems等的实验表明,氟可抑制TSH引起的甲状腺上皮细胞对胶质的胞饮、甲状腺激素的分泌和糖的有氧氧化⁽¹²⁾。因此,可以认为高氟对SH引起的甲状腺效应有干扰作用。其机制可能是多方面的,高氟直接抑制TSH与甲状腺上皮细胞表面特异受体的结合;降低甲状腺腺苷酸环化酶的活性,致cAMP生成减少;抑制甲状腺上皮细胞中核酸和蛋白质的合成,甲状腺不表现增殖反应^(13,14)。由于以上作用,虽然血清TSH升高,但却无甲状腺肿大发生。

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ABSTRACTS OF ORIGINAL ARTICLES

OBSERVATION ON IgG DEPOSITION IN MYOCARDIAL TISSUES IN KESHAN DISEASE-Using the Immunofluorescent Assay and Immunoenzyme Labelled Technique for Necropsy and Biopsy Materials

Guo Zhen, et al

In order to demonstrate IgG deposition in myocardial tissues for necropsy in 3 cases of Keshan disease and biopsy in 2 patients with chronic Keshan disease and biopsy in 21 patients with other cardiomyopathy, we used the immunofluorescent assay and immunoenzyme-labelled technique. Immunofluorescent assay,

The paraffin sections were first treated with trypsin and stained with FITC fluoresceinated sheep anti-human IgG. IgG granular or focal deposits were found in myocardial tissues affected by Keshan disease, and were clearly seen in the endocardium, myocardial fibers and blood vessel walls

Peroxidase-labelled antibody technique,

There was a satisfactory observation of IgG deposit which were granules or a short string of beads in shape. The arranged

along the longitudinal axis of myocardial fiber.

It is postulated that the result is related to pathological mechanism of Keshan disease.

(Original article on page 233)

STUDY ON SERUM T₄, T₃ AND TSH LEVELS IN PATIENTS WITH CHRONIC SKELETAL FLUOROSIS

Yu Yanni, et al

A study on the serum T₄, T₃ and TSH levels was performed in 27 patients with chronic skeletal fluorosis and the data obtained were compared with those of 20 health persons. The results showed that serum T₄ in the patients was lower than in the controls and TSH was higher. While serum T₃ showed no significant difference. There was no goiter found in the patients. These data indicate that fluorine may reduce serum T₄ by interfering the thyroid function. The increase of TSH secretion is the consequence stimulated by a feedback mechanism but no proliferation and enlargement of the thyroid gland were resulted since the reactivity of the thyroid to rise serum TSH stimulation is inhibited by the fluorine.

(Original article on page 242)

QUANTITATIVE DETERMINATION OF UBIQUINONES IN TISSUES BY HIGH SPEED LIQUID CHROMATOGRAPHY

Zhang Dianqing, et al

A method for the determination of ubiquinone homologues (UQ) in heart, liver and kidney is described. Heart, liver or kidney homogenate was extracted with n-hexane. The n-hexane extract was evaporated under N₂ gas at 35°C and the residue was dissolved in 0.5 ml ethanol. The sample solution was applied to the high speed liquid chromatography (HSLC) using a permaphase ODS column and ethanol as a mobile phase, a high sensitive multiple wavelength detector set at 275nm (absorption maximum of UQ) was used as a detector. The proposed HSLC method was found to be more simple and specific than the other conventional determination methods.

(Original article on page 244)

CONTRAST ANALYSIS ON ESSENTIAL AMINO ACIDS IN OATS FROM ENDEMIC AND NONENDEMIC AREAS OF KESHAN DISEASE

Fu De, et al

This paper reports the result of experiment in analysing eight kinds of amino acids in oats from

endemic and nonendemic areas of Keshan disease. The results revealed that among eight kinds of amino acids only tryptophan was in significant difference ($P < 0.01$).

Tryptophan in maize and soybean was analysed too, tryptophan in soybean was ample, but in maize it was very few. We considered that the deficiency of tryptophan might be related to the attack of Keshan disease.

(Original article on page 248)

STUDIES ON THE CLINICAL MANIFESTATIONS, IODINE METABOLISM AND FUNCTIONAL STATUS OF PITUITARY THYROID AXIS OF ENDEMIC CREPINISM IN NORTH FUJIAN

Lin Biguang, et al

This paper reports studies on the clinical manifestations iodine metabolism and functional status of pituitary-thyroid axis of 30 cases of endemic cretinism in Guangze Cauntry of Fujian Province. There was an appearance with mental subnormality and stunted growth in various degrees among all patients surveyed. Disturbances of speech, audition and movement accounted for 86.7%, 66.7% and 53.7% respectively. The average values of urine iodine excretion was 41.7µg/g creatinine. The 24-hr thyroid¹³¹I up-take was 43%. The serum T₃