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Trends about Cerebral Syphilis in a 31 Young Patient: A Case Study with Cerebral Perfusion (Spect)

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ABSTRACT

The cerebral syphilis (CS) became occasional because the detection and to the treatment of the disease in its initial phase. It not disappeared and still present in our days. It is priority to consider the solicitude of syphilis serological reactions in diverse manifestations. Now the use of a Gama Camera to obtain images with Nuclear Medicine probes begin a new era in diagnoses about this disease. With a data bank of images obtained in patients committed with this ill it is be possible to reach a good diagnostic and a good following of the patients. In this work we present a clinical case of a patient 31 years old that have cerebral syphilis showing alterations in brain nuclear medicine images that were useful to make a diagnostic of the disease. The images were obtained with a two-head Gama Camera used with the HMPAO binding with 20mCi of Technetium-99m by endogenous injection, they were made tomographic and tridimensional images. It was seen a significant area with hypo perfusion in topography bi-parietal of the cingulate and superior and inferior faces of the brain, with symmetrical character. The base nucleus (caudate and thalamus) was showed in hyper-perfusion. The rutinary exam of cerebral SPECT with HMPAO revealed a significantly perfusion area and the need of complementary image exams, that evaluated to the final diagnostic of tertiary syphilis. It was evidenced the clinical importance of investigate routineer the cerebral SPECT in patients coming of the psychiatry.

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Introduction

Syphilis is caused by *Treponema pallidum* transmitted by sexual contact, which results in infection in approximately one-third of encounters with infected individuals [1]. Dementia from neurosyphilis was common in the pre penicillin era but is now rare [2]. The cerebral syphilis (CS) became occasional because the detection and to the treatment of the disease in its initial phase. It not disappeared and still present in our days. It is priority to consider the solicitude of syphilis serological reactions in diverse manifestations. All the forms of cerebral syphilis came from one meningovasculitis, that could be expression subacute in the secondary period or remain latent until the manifestations last appearance more or less [3]. See classification of the CS in table 1.

Table 1: Classification of syphilis disease

Stage	Description	Signals and symptoms
Acquired		
Primary	Contagious	Small cutaneous lesion, normally without pain; local lymphadenopathy.
Secondary	Contagious; occurs weeks or months after primary phase.	Rash, mucous erosions, hair fall, fever, much other symptoms.
Latent	Asymptomatic; generally, not contagious; could persist indefinity or could evolute to early phase	Precocious latent syphilis: infection with < of 1 year, sometimes with infections lesions relapse. Late latent syphilis: infection with > of 1 year, rarely recurrency, positive serologic tests.

Late or tertiary	Symptomatic; not contagious	Clinical classification: benign tertiary syphilis, cardiovascular syphilis, or neurosyphilis.
Congenital		
Precocious	Symptomatic; occur util 2 years old.	Disease manifest
Late	Symptomatic; occur later in the life.	Bone or optic abnormalities

The *Primary syphilis* is characterized by local skin lesions (chancres) that usually appear within 1 month of exposure. Hematogenous spread of *T. pallidum* produces symptoms and signs of *secondary syphilis*, including fever, skin rash, alopecia, anogenital skin lesions, and ulceration of mucous membranes, within 1 to 6 months. Neurologic symptoms are uncommon. *Meningeal syphilis*, the earliest form of symptomatic neurosyphilis, occurs 2 to 12 months after primary infection, and is associated with headache, stiff neck, nausea and vomiting, and cranial nerve (especially II, VII, or VIII) involvement. *Meningovascular syphilis* is seen 4 to 7 years into the course of the disease and usually presents with transient ischemic attacks or stroke [4].

The *Late* (*parenchymatous*) *neurosyphilis* produces the syndromes of general paresis and tabes dorsalis, which can occur separately or together (taboparesis); either one can occur in combination with optic atrophy. General paresis is a chronic meningoencephalitis caused by active spirochaetal infection. Onset is with gradual memory loss or altered affect, personality, or behaviour. This is followed by global intellectual deterioration with grandiosity, depression, psychosis, and focal weakness. Terminal features include incontinence, seizures, or strokes. Neurologic examination may show tremor of the face and tongue, paucity of facial expression, dysarthria, and pyramidal signs. Taboparesis is the coexistence of tabes dorsalis with general paresis. Signs and symptoms of tabes dorsalis include Argyll Robertson pupils, lancinating (stabbing) pains, areflexia, posterior column sensory deficits with sensory ataxia and Romberg sign, incontinence, impotence, Charcot (hypertrophic) joints, and genu recurvatum (hyperextended knees). Optic atrophy may also be present [4, 18].

Before of the penicillin, it was observed alterations of the cerebrospinal fluid (CSF) in the secondary period in half of the cases: lymphocyte hyper colonise (100 to 300 cells) and moderate increase of the liquor albumin (0.40 to 0.80 g/L), with a right level of Gamma globulins and positive serology in blood and in cerebrospinal liquid [5,6]. This secondary meningitis appears to a febrile meningeal syndrome, associated or not to vigilance alterations, the commitment of one or various cranial nerves, or of one or various spinal-roots, until focal encephalic signals [7]. General paresis is treated as described for syphilitic meningitis earlier. Transient fever and leucocytosis may occur shortly after therapy is started. Failure of the CSF to return to normal within 6 months requires retreatment.

In a general manner, the treatment by penicillin provokes the rapid regression of the clinic signals and normalization of the CSF in a few months [8].

A meningovascular syphilis (MS) is a direct consequence of the development of a syphilis vasculitis [9]. Its expression depends of the topography and of the affected artery calibre. The disease could be dominated by cranial nerves commitment, a hemispheric semiology or cerebral column, or a medullary commitment yet, could be assume the shape of acute transverse myelitis [10]. The inflammatory nature of the CSF could do remember the syphilis. The treatment by penicillin permits evolution stops.

Treponemal serologic blood tests (fluorescent treponemal antibody absorbed [FTA-ABS] or microhemagglutinationTreponema pallidum [MHATP]) are reactive in almost all patients with active neurosyphilis , but non-treponemal blood tests (Venereal Disease Research Laboratory [VDRL] or rapid plasma reagin [RPR]) can be negative; therefore, a treponemal blood test should be obtained in all suspected cases [11,12]. If this is nonreactive, neurosyphilis is effectively excluded; if it is reactive, lumbar puncture should be performed to confirm the diagnosis of neurosyphilis and provide a baseline CSF profile against which to gauge the efficacy of subsequent treatment[13]. The CSF in active neurosyphilis shows a lymphocytic pleocytosis and reactive nontreponemal CSF serology (VDRL), except in early meningeal and meningovascular syphilis and end-stage tabes dorsalis [14]. Other CSF abnormalities include protein elevation, increased γ-globulin, and the presence of oligoclonal bands. The Magnetic Resonance Image (MRI) in general paresis may show unilateral or bilateral medial temporal lobe T2 high-intensity abnormalities with or without associated atrophy [15]. Now the use of a Gama Camera to obtain images with Nuclear Medicine probes begin a new era in diagnoses about this disease [16]. With a data bank of images obtained in patients committed with this ill it is be possible to reach a good diagnostic and a good following of the patients [17].

In this work we present a clinical case of a patient 31 years old that have cerebral syphilis showing alterations in brain nuclear medicine images that were useful to make a diagnostic of the disease.

Material and Methods

The patient, SES, was a man of 31 years old with physical exams normal, to the palpation, auscultate and cutaneous exam, complain of memory lost. The patient still according with the use of all information in this work.

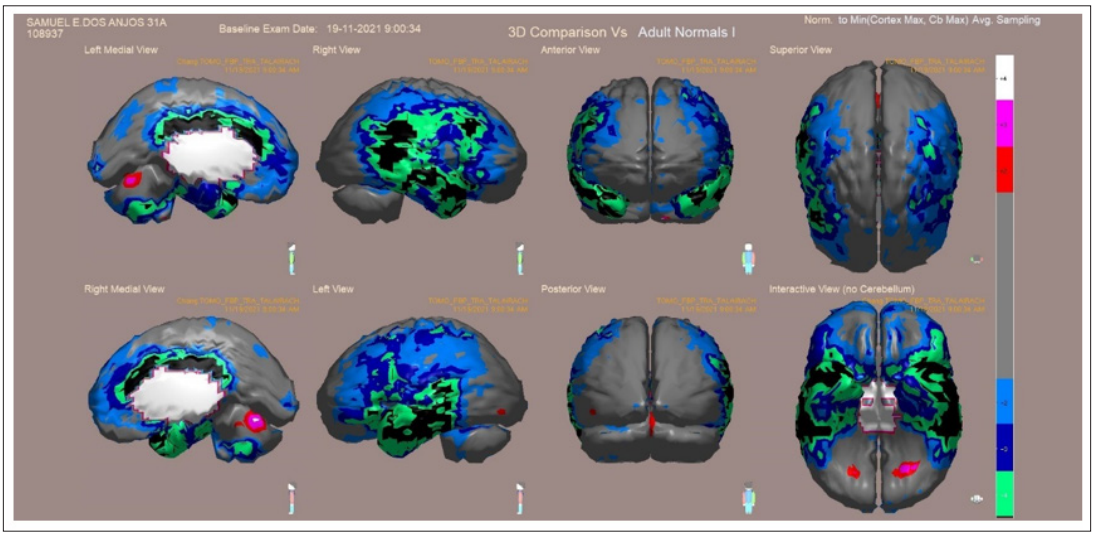
The images were obtained with a two-head Gama Camera (Siemes, Symda model), used with the HMPAO binding with 20mCi of Technetium-99m by endogenous injection, they were made tomographic and tridimensional images.

The alterations were of great zones of hypo perfusion bi-parietal zones on both inferior and superior faces, year fight the base nucleus.

Results

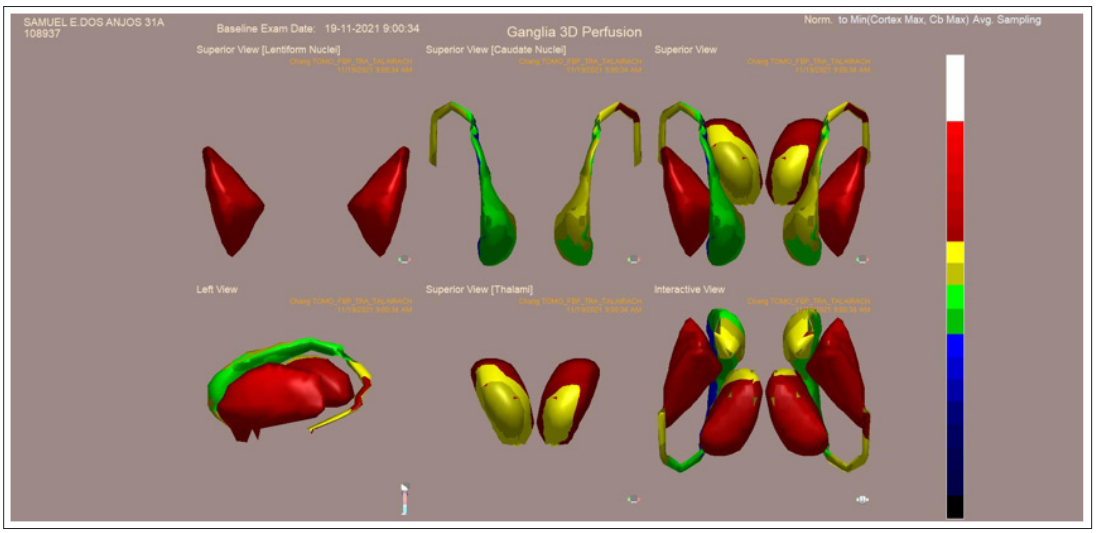
In the figure 1 it was seen a significant area with hypo perfusion represented by blue colour, in topography bi-parietal, of the cingulate and superior and inferior faces of the brain, with symmetrical character.

Figure 1: Topography bi-parietal obtained with HMPAO brain perfusion



In the figure 2 the base nucleus (caudate and thalamus) was showed in hyper perfusion with green colour.

Figure 2: HMPAO perfusion of the base nucleus



Cerebral hemispheres hypo-prefunded significantly common to cases of metabolic/ deposit disease. Although the age been Young could be considered Alzheimer. To any Ethiology the diagnostic is reserved, because there is base nucleus compromise.

Discussion

Beginning with a routine exam of cerebral scintigraphy, extended the clinical exploration with others methods, reach to a final diagnostic of tertiary syphilis [13-16].

The magnetic resonance showed certain grade of atrophy, besides the analysis of the liquor presented the etiologic agent (Treponema pallium). The clinic exam was of low expression and the patient deny the previous diagnose of syphilis, at the moment complain of accentuated loss of memory.

The scintigraphy of extensa hypo-perfusion was unspecific for syphilis diagnostic in the medical literature [17].

It was evidenced to be a parenchymatous grave lesion. Severe symmetric diffuse hypo-perfusion (systemic disease type), bi-parietal of the cingulate, frontal, of the superior and inferior face. Hypo-perfusion also in cerebellum. Hypo-perfusion in the subcortical structures observe hypo-perfusion in the caudates and thalamus.

It is a new approach about this disease and a new way of diagnostic matters using nuclear medicine images to do this diagnostic. We know that the present of those images could elucidate the comprehension about the disease.

Conclusion

The rutinary exam of cerebral SPECT with HMPAO revealed a significantly perfusion area and the need of complementary image exams, that evaluated to the final diagnostic of tertiary syphilis. The clinic in this phase much walked away of classic diseases, Alzheimer, neoplasia, bipolarity, other.

The main idea is that it was an organic disease, metabolic/ deposit. It was evidenced the clinical importance of investigate routineer the cerebral SPECT in patients coming of the psychiatry.

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References

1. Stamm LV (2016) Syphilis: Re-emergence of an old foe. Micobial Cell 3: 363-370
2. Ghanem KG (2010) Neurosyphilis: A historical perspective and review. CNS Neurosci Ther. 16: 157-168.
3. Peeling RW, Mabey D, Kamb ML, Chen XS, Radolf JD, et al. (2017) Syphilis. Nat Rev Dis Primers 3: 17073.
4. Rissardo JP, Caprara AL (2020) Neurosyphilis-associated movement disorder: A literature review. Ann Mov Disord 3: 129-144
5. Matzneller P, Burian A, Zeitlinger M, Sauermann R (2016) Understanding the Activity of Antibiotics in Cerebrospinal Fluid in vitro. Pharmacology 97: 233-244.
6. Knaute DF, Graf N, Lautenschlager S, Weber R, Bosshard PP (2012) Serological response to treatment of syphilis according to disease stage and HIV status. Clin Infect Dis 55: 1615-1622.
7. Hong JH, Lee HY, Lim MK, Kang YH, Lee KH, et al. (2014) Meningovascular and spinal form of neurosyphilis presenting as multiple cranial nerve palsy, cerebral infection and meningomyelitis in a human immunodeficiency virus negative-patient: MR Imaging features. JKSMRM 18: 263-268.
8. Mengistu A, Gaeseb J, Uaaka G, Ndjavera C, Kambyambya K, et al. (2013) Antimicrobial sensitivity patterns of cerebrospinal fluid (CSF) isolates in Namibia: implications for empirical antibiotic treatment of meningitis. J Pharm Policy Pract 6: 4.
9. Nepal Nakasato, Sat Prasad Nepal, Takehiko Nakasato, Takashi Fukagai Takeshi Shichijo , et al. (2021) Hard bilateral syphilitic testes with vasculitis: a case report and literature review. BMC Urol 21: 120.
10. Elmouden H, Louhab N, Kissani N (2019) Medullary involvement in neurosyphilis: a report of 12 cases and a review of the literature. Spinal Cord Ser Cases 5: 38.
11. Shah D, Marfatia YS (2019) Serological tests for syphilis. Indian J Sex Transm Dis AIDS 40: 186-191.
12. Henao-Martínez AF, Johnson SC (2014) Diagnostic tests for syphilis: new tests and new algorithms. Neurol Clin Pract. 4: 114-122.
13. Boog GHP, Lopes JVZ, Mahler JV, Solti M, Kawahara LT, et al. (2021) Diagnostic tools for neurosyphilis: a systematic review. BMC Infect Dis 21: 568.
14. Gonzalez H, Koralnik IJ, Marra CM (2019) Neurosyphilis. Semin Neuro 39: 448-455.
15. Chen CW, Chiang HC, Chen PL, Hsieh PF, Lee YC (2005) General paresis with reversible mesial temporal T2-weighted hyperintensity on magnetic resonance image: a case report. Acta Neurol Taiwan. 14: 208-212.
16. Ilisie V, Moliner L, Morera C, Nuyts J, Benlloch JM (2021) Gamma Camera Imaging with Rotating Multi-Pinhole Collimator. A Monte Carlo Feasibility Study. Sensors (Basel) 21: 3367.
17. Jales RLC, Santos-Filho SD (2021) Psychiatric Diagnostic Confirmed by Cerebral Simple Proton Emission Computed Tomography (SPECT). Japan J Clinic Med Res 1: 1-3.
18. Xia-Er-Ba-Ti Ha-Bu-Lie-Ti , Ling-Ling Wang , Ya-Lin Zhu (2021) An unusual case of tertiary syphilis. Clin Exp Dermatol doi: 10.1111/ced.15066