

## Case report

### TABETIC ARTHROPATHY: A rare condition often overlooked.

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#### ABSTRACT

**AIMS:** Tabetic Arthropathy (TA), a rare complication of neuro-syphilis, has become exceptional due to early syphilis treatment. We report two observations.

**CASE 1:** A 68-year-old man, presented painless swelling of left knee lasting for 1 year. Physical examination showed positive patella tap, painless mobilization with limited flexion, ataxia, negative Romberg's test and positive Argyll Robertson pupils. Syphilitic serology was positive in blood and in joint fluid and doubtful in cerebrospinal fluid. Knee X-ray showed massive joint destruction with osteolysis and condensation of tibial plateau.

**CASE 2:** A 54-year-old man, presented for a large painless left knee that started two months before. Physical examination showed a positive patella tap, painless mobilization with limited flexion, tabetic gait, preserved DTR with positive Romberg's test. Syphilitic serology was positive in blood, and in joint fluid. Knee X-ray showed a Genu Valgum with advanced Patellofemoral arthritis and a reconstruction image at the upper edge of the patella.

Their treatment was based on penicillin G.

**DISCUSSION:** TA is a rare complication of neurosyphilis. It is characterized by its usual indolence and the importance of bone deformities. Positive syphilitic serology in joint fluid, blood and/or CSF is essential for diagnosis. Penicillin G is the cornerstone of currently available therapies. Orthopedic treatments are suggested according to the importance of destruction.

**CONCLUSION:** Prevention through early detection and treatment of syphilis is necessary because of therapeutic difficulties and complications of this joint form.

*Keywords: Tabetic arthropathy, syphilis, serological diagnosis, penicillin G*

#### INTRODUCITON

Tabetic Arthropathy (TA), a rare complication of neuro-syphilis. Indeed, it is a chronic condition characterized by articular lesions of nervous origin, the knee being the joint frequently affected (1)

It is a consequence of a loss of painful and proprioceptive innervation, responsible for major destruction of joints that are continually subjected to the traumas of everyday life. It has become exceptional thanks to the early treatment of syphilis with penicillin. It complicates about 10% of tabes.(2)

In our context, it is still a therapeutic problem due to important joint destruction. We report two observations.

**Comment [51]:** What is the main aim of the case report?

**Comment [52]:** Please include few more information about Tabes dorsalis. Insufficient background info

## PRESENTATION OF CASES

**Case 1:** A 68-year-old man presented with painless swelling of the left knee lasting for 1 year, causing lameness in a context of **apyrexia**.

Physical examination showed a large swelling of the left knee without inflammatory signs, positive patella tap, painless mobilization with limited flexion. The neurological examination found ataxia and diminished deep tendon reflexes (DTR), negative Romberg's test and positive Argyll Robertson pupils. Syphilitic serology was positive in blood and in joint fluid and doubtful in cerebrospinal fluid (CSF) (**Table I**).

**Table I. Laboratory Data of the Patient "case 1".**

	TPHA*	VDRL*
Blood	Positive : 2560	Negative
Joint fluid	Positive : 320	Negative
CSF	Doubtful	Negative

TPHA\* (*Treponema Pallidum Hemagglutinations Assay*)

VDRL\* (*Venereal Disease Research Laboratory*)

Knee X-ray showed massive joint destruction with **osteolysis** and condensation of tibial plateau. Depression of the internal tibial plateau with detachment of multiple bone fragments and adjacent osteochondrosis with genu valgum (Figure 1). The diagnosis of TA was retained, and the patient received **penicillin G** with slight clinical improvement after 10 days. Traumatologists have indicated a left orthosis and scheduled surgery after antibiotic therapy.



**Fig. 1. Destruction of the left knee joint**

**Comment [53]:** Was there any significant past history that could be highlighted?

**Comment [54]:** What is the dosage ?

**Case 2:** A 54-year-old man, followed since 2010 for neuro-syphilis with tabetic arthropathy of the two hips having received seven cures of penicillin G. He consulted for a large painless left knee that started two months before.

The physical examination revealed a large swelling of the left knee without inflammatory signs a positive patella tap, painless mobilization with a limited flexion of 30 ° with a 5 ° flexion leading to tabetic gait. The neurological examination found ataxia, preserved DTR with positive Romberg's test. Syphilitic serology was positive in blood, and in joint fluid (Table II).

**Table II. Laboratory Data of the Patient “case 2”.**

	TPHA	VDRL
Blood	Positive : 1/81920	Positive : 1/8
Joint fluid	Positive : 1/40960	Negative

Knee X-ray showed a Genu Valgum with tibiofemoral and patellofemoral joint narrowing and a reconstruction image at the upper edge of the patella and the medial border of the tibiofemoral joint, with projection of some osteochondromas (Figure 2).

The diagnosis of TA was retained, and the treatment was based on penicillin G.

Comment [55]: Dosage?



**Fig. 2. Left tibiofemoral osteoarthritis with reconstruction**

## DISCUSSION

Tabetic arthropathy (TA) is a chronic degenerative condition secondary to a loss of painful and proprioceptive sensory innervation, which leads to significant joint destruction (3)(4). It is present in 10% of cases of tabes,

generally 10 to 20 years after its first signs (1)(5). This serious condition has become exceptional thanks to early treatment with penicillin (6). The initial description of tabetic arthropathies came from Charcot in 1868 (7,8), completed by Kroenig from 1884 and clarified by the anatomical studies of Abadie in 1900 (1). Then Alajouanine and Thurel specify the radiological aspects in 1934(7,8), The male predominance is noted in the literature with an average age of 60 years (6) which agrees with our cases.

Tabetic arthropathy is characterized **clinically** by the striking contrast between the extent of joint deformities and indolence (1,9) Its mode of onset can be abrupt during an improper movement or subacute over few days, with a sensation of cracking and a buckling of the legs (10).

**Topographically**, all the joints can be affected with a clear predominance for the lower limb(1). There are also polyarticular and bilateral forms (3). The knee joint is the most frequently affected followed by the ankles, hips and shoulders (11). Our two patients had knee involvement.

The **pathogenesis** of these arthropathies is based on two theories that have been raised by several authors (3):

- A mechanical theory due to joint anesthesia removing all protection from the joint, which will be exposed to repeated trauma. Tabetic arthropathy would be then, a post-traumatic osteoarthritis (11).
- A trophic theory related to lesions of the sympathetic system which disturb osteoarticular trophicity by a vasculosympathetic mechanism with osteoclastic hyper-resorption explaining spontaneous fractures (12).

The **radiological** aspect often shows demineralization lesions, osteophytes, lines of intra-articular fractures and more or less clear compression of the epiphyses, in particular at the level of the tibial plateaus (1,2,10). At an advanced stage, there are signs of a characteristic association of destructive and constructive lesions which define the atrophic and hypertrophic forms (3).

In the absence of a context of syphilitic disease, the association of painless joint deformity and radiological images of joint destruction with or without neurological signs should suggest the diagnosis of tabetic arthropathy (3,11).

However, the demonstration of positive syphilitic serology in joint fluid, blood and/or CSF is essential to retain the diagnosis (5). In our patients, syphilitic serology was positive in blood and joint fluid.

**Serological tests** for the diagnosis of syphilis include nontreponemal tests and treponemal tests. Non-treponemal tests (VDRL, RPR) are rapid, simple and inexpensive, but have limited sensitivity to primary syphilis and late latent syphilis (13)(14).

- Treponemal tests include Treponema pallidum hemagglutination test, Treponema pallidum particle agglutination test, and FTA-ABS test.
- Treponemal tests correlate poorly with disease activity, and they are used primarily to confirm a positive non-treponemal test. However, they can be used for the diagnosis of late syphilis despite a negative non-treponemal test (13)(14).

Care should be taken when interpreting the results as the sensitivity and specificity are different depending on the type of test and the stages of syphilis (15).

**Penicillin G** is the cornerstone of therapies currently available. Its main purpose is to sterilize infectious lesions and stabilize joint damage. The dose varies from 20 to 30 million units per day for three weeks, the number of cures is variable: 2 to 4 cycles depending on the clinical, biological and evolutionary data of the disease (11)(1)(4,10). In case of penicillin allergy, cyclins (mainly doxycycline) can be used (3)(2). Our two cases received penicillin G.

Local treatment including joint lavage, local corticosteroid therapy or synoviorrhesis can be proposed in case of significant effusion (11). At the same time, orthopedic treatment is often indicated, but remains disappointing so far (12).

Reducing joint instability with immobilization and non-weight bearing is of paramount importance in protecting against even minor trauma that can worsen the impairment (11)(2). The indication for **prosthetic arthroplasty** is limited by the extent of the destruction, the local condition and the risk of loosening. **Arthrodesis** is often indicated in the most altered forms of TA with a deformed and unstable joint (11).

Arthrodesis was indicated in case 1, but was not performed due to lack of financial means.

## CONCLUSION:

Tabetic arthropathy is currently a rare condition that is often overlooked, occurring during the evolution of tabes in 10% of cases.

It should be considered if there is a contrast between the extent of joint destruction and clinical indolence, syphilitic serologies can confirm the diagnosis.

Above all, the best treatment requires early and effective treatment of syphilis, without forgetting the important role of the prevention of syphilis as a sexually transmitted disease.

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## REFERENCES :

1. Zouhair K, Akhdari N, El Ouazzani T, Lazrak S, Lakhdar H. Tabetic arthropathy: "a forgotten disease". *Annals of Dermatology and Venereology*. 2004 Aug;131(8-9):787-9.
2. Rafai MA, Oumari S, Boulaajaj FZ, Gynerane M, Moutawakkil BE, Slassi I. Severe tabetic arthropathy revealing neurosyphilis. *NPG Neurology - Psychiatry - Geriatrics*. 2010 Oct;10(59):225-8.
3. El-Fatimi A, Mkinsi O, Etaouil N, Benyahya E, Janani S, Bennis R. Tabetic arthritis of the knee: About 4 cases. *Rheumatology* [Internet]. 1997 [cited 2023 Jan 31]; Available at: <https://www.semanticscholar.org/paper/Les-arthropathies-tab%C3%A9tiques-du-genou-%3A-A-propos-de-El-Fatimi-Mkinsi/7cbe2404c4cab2f02a6eb7c29bbc5f2718e256dc>
4. Hsaini Y, Karouache A, Satte A, Zerhouni A, Bourazza A. Ataxia revealing tabetic arthropathy of the spine. *The Medical Press*. 2010 Oct;39(10):1109-11.
5. Kim CW, Lee CR. Multifocal neuropathic arthropathy in patient with undiagnosed neurosyphilis: A case report. *Int J STD AIDS*. 2017 Jun;28(7):729-31.
6. GRAUER JL, DREVET JG, ZAGALA A, PHELIP X. Osteoarticular manifestations of syphilis. About two cases. *Rheumatology (Aix-Bains)*. 1985;37(10):321-6.
7. Rapala K, Obrębski M. Charcot's Arthropathy of the Hip Joints. *The Journal of Arthroplasty*. 2007 Aug;22(5):771-4.
8. Charcot J. M. On some arthropathies which seem to depend on a lesion of the brain or the spinal cord. *Arch, physiol norm and pathol*. 1868;1:161-78.
9. Hsaini Y, Mounach J, Satté A, Zerhouni A, Qacif H, Mosseddaq R. Arthrotabes: about five cases. *The Journal of Internal Medicine*. Jun 1, 2007;28:101.
10. Tinni IA, Yaméogo NW, Compaoré V, Savadogo JE, Ouédraogo M, Zabsonré/Tiendrébéogo WJS, et al. Tabetic arthropathy: a condition not to be forgotten. *Francophone African Rheumatology*. 2020;3(1):24-9.
11. Allali F, Rahmouni R, Hajjaj-Hassouni N. Tabetic arthropathy. A report of 43 squares. *Clin Rheumatol*. 2006 Sep 25;25(6):858-60.
12. Biotti D, Fuerea R, Deschamps G, Durupt S. Neurogenic osteoarthropathy of the knee associated with spina bifida: a diagnosis not to be overlooked. *The Journal of Internal Medicine*. 2009 Nov 1;30(11):985-7.

13. Ratnam S. The laboratory diagnosis of syphilis. *Can J Infect Dis Med Microbiol.* 2005;16(1):45-51.
14. Seña AC, White BL, Sparling PF. Novel *Treponema pallidum* serologic tests: a paradigm shift in syphilis screening for the 21st century. *Clin Infect Dis.* 2010 Sep 15;51(6):700-8.
15. Morshed MG, Singh AE. Recent trends in the serologic diagnosis of syphilis. *Clin Vaccine Immunol.* 2015 Feb;22(2):137-47.

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