Séminaire virtuel DES-C MIT octobre 2025

Toxoplasmose en contexte de transplantation

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Pas de lien d'intérêt avec des organismes produisant ou exploitant des produits de santé ou avec des organismes de conseil intervenant sur ces produits

X, 50 ans
Allogreffe de CSH pour LAM

→ Complications infectieuses post-greffe :
réactivation adénovirus, EBV (rituximab)

→ GVHD aiguë (CTC, ciclo, ruxolotinib)

→ M6 post-greffe :
Découverte fortuite cytolyse hépatique 8N

Thrombopénie 30 G/L
Lymphopénie < 0,1 G/L
Cytolyse hépatique 50 N
Créatininémie 250 µmol/L
Tropo 4000 ng/L
CRP 250 mg/L
Ferritine 400 000 µg/L, triglycérides 6 g/L

H+24 : fièvre, myalgies ➔ Hospitalisation

H+48 : détresse respiratoire aiguë, état de choc ➔ Réa

H+60 : défaillance multiviscérale. Décès

PCR toxoplasmose sanguine positive

Toxoplasmose chez le transplanté : ***une complication redoutable***

Toxoplasmosis in Transplant Recipients, Europe, 2010–2014

Table 5. Survival among transplant patients with toxoplasmosis, according to patients' characteristics, Europe, 2010–2014

Characteristic	2-mo survival		6-mo survival	
	No. patients/no. survived (%)	p value*	No. patients/no. survived (%)	p value*
All patients	61/87 (70)	Not applicable	46/87 (53)	Not applicable
Chemoprophylaxis				
Yes	30/35 (86)	<0.05	26/35 (74)	<0.01
No	27/43 (63)		16/43 (37)	
Recipient serologic status				
Positive	27/45 (60)	<0.05	15/45 (33)	<0.001
Negative	22/25 (88)		20/25 (80)	
Type of graft				
Hematopoietic stem cell	36/58 (62)	<0.05	22/58 (38)	<0.001
Solid organ	25/29 (86)		24/29 (83)	

*Exact χ^2 test.

étude rétrospective,
Europe 2010-2014,
n=87 (allo-HSCT, n=58 ; SOT, n=29)

retard diagnostique
comorbidités (infections, GVH)

**SOT: solid organ transplantation – transplantation d'organe solide* *Robert-Gangneux Emerg Infect Dis 2018*

*Toxoplasmose chez le transplanté : **présentation clinique différente** de celle rencontrée chez les PVVIH*

Toxoplasmosis in Transplant Recipients, Europe, 2010–2014

Table 1. Characteristics of 87 transplant patients with toxoplasmosis, according to clinical presentation, Europe, 2010–2014*

Variables	Clinical type						p value
	Cerebral	Ocular	Disseminated	Pulmonary	Fever alone	No signs	
No. (%) patients	13 (15)	4 (5)	19 (22)	10 (11)	10 (11)	31 (36)	
Patient age, y, mean ± SE	37.0 ± 7.7	60.7 ± 0.8	47.8 ± 5.6	53.1 ± 4.8	35.5 ±4.4	46.4 ± 4.2	<0.0001
Time graft/diagnosis, wk, mean ± SE	123 ± 151	313 ± 175	163 ± 124	19 ± 11	73 ± 43	99 ± 51	<0.05
Diagnosis by, no. (%)							
PCR	13 (100)	3 (75)	17 (89)	9 (90)	9 (90)	26 (84)	<0.001
Serology	3 (23)	3 (75)	9 (47)	2 (20)	5 (50)	5 (16)	0.2278
Imaging	12 (92)	3 (75)	8 (42)	7 (70)	0	2 (6)	<0.01
Microscopy	1 (8)	0	6 (32)	1 (10)	0	0	<0.01
Graft type, no. (%)							<0.05
Liver, n = 8	1 (8)	1 (25)	3 (16)	2 (20)	0	1 (3)	
Kidney, n = 9	1 (8)	1 (25)	1 (5)	2 (20)	3 (30)	1 (3)†	
Heart, n = 12	0	1 (25)	5 (26)	0	2 (20)	4 (13)‡	
Allo-HSC, n = 58	11 (85)	1 (25)	10 (53)	6 (60)	5 (50)	25 (81)§	

maladie localisée ⟷ **maladie disséminée** ⟷ **infection asymptomatique**

Robert-Gangneux J Clin Microbiol 2015 – adapté de *Robert-Gangneux Emerg Infect Dis 2018*

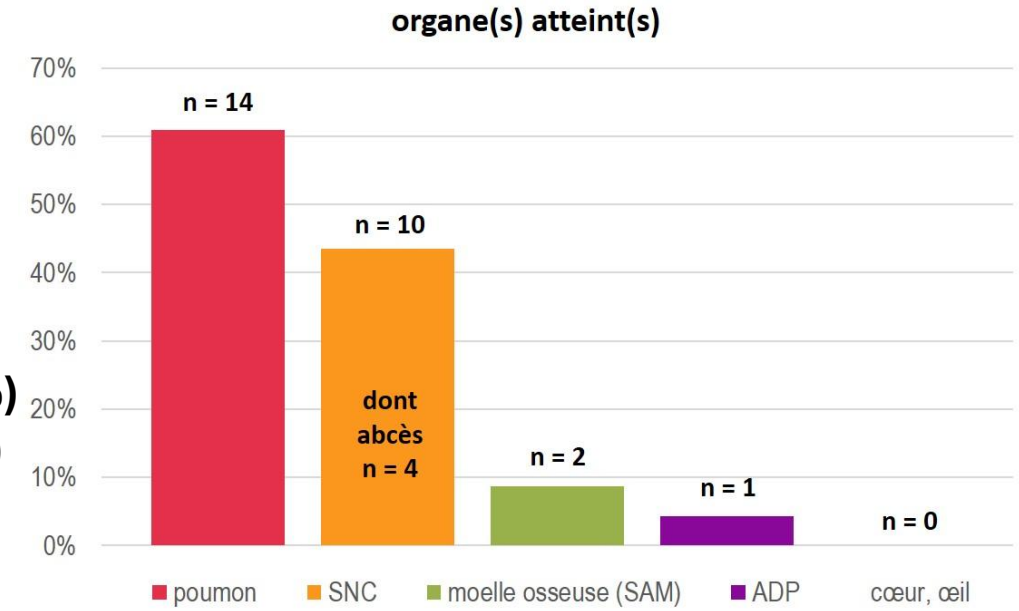
Particularités cliniques de la toxoplasmose ***chez l'allogreffé de CSH***

A matched case–control study of toxoplasmosis after allogeneic haematopoietic stem cell transplantation: still a devastating complication

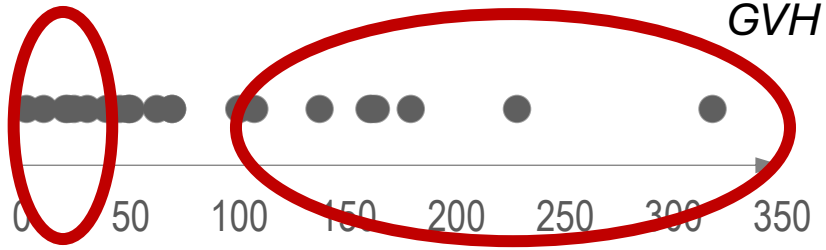
étude rétrospective,
Lyon 2006-2015,
n=23 (allo HSCT)

délai médian 62 jours

disséminée, n=7 (30%)
infection aΣ, n=3 (13%)



Timing ?



étude rétrospective,
Créteil 2007-2018,
n=17 (allo HSCT) soit 4%

délai médian 45 jours
dont n=7 avant J30

Toxoplasmosis as an Early Complication of Allogeneic Hematopoietic Cell Transplantation

mortalité attribuable, n=10 (43,5%)

Conrad Clin Microbiol Infect 2016 – Robin BBMT 2019 – Contopoulos-Ioannidis Transplantation 2022 - Segall Transpl Int 2006 – Duband Transpl Infect Dis 2008 – Alcazer Am J Hematol 2019 – Paccoud BMT 2020 – Aerts Clin Microbiol Infect 2021

*Toxoplasmose **chez l'allogreffé de CSH** : définitions*

avec atteinte d'organe

prouvée = histo/cyto

probable = PCR + imagerie

possible = imagerie (SNC)

« **PCR sang positive** »

avec ou sans fièvre

sans atteinte d'organe

Infection latente → Toxo infection → Toxo maladie

Martino Clin Infect Dis 2000 – Cordonnier EBMT 2001 – Aerts Lancet Infect Dis 2024

X, 50 ans
Allogreffe de CSH pour LAM

Complications infectieuses post-greffe :
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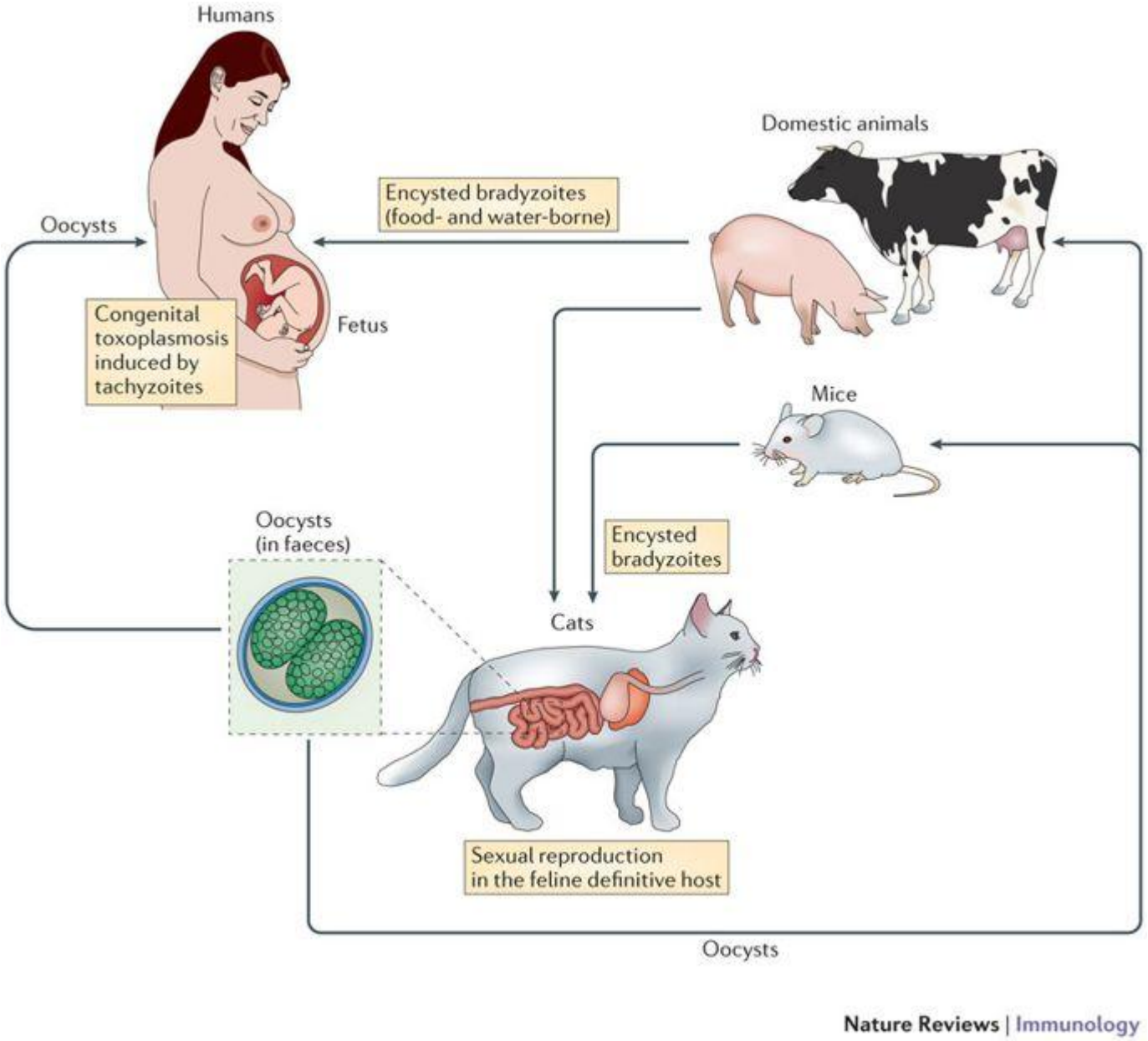
Toxoplasmose R+/D-
Pas de prophylaxie

Physiopathologie de la toxoplasmose



Yarovinsky Nat Rev Immunol 2014

Physiopathologie de la toxoplasmose

Primo-infection

Enfants et adultes

Femme enceinte

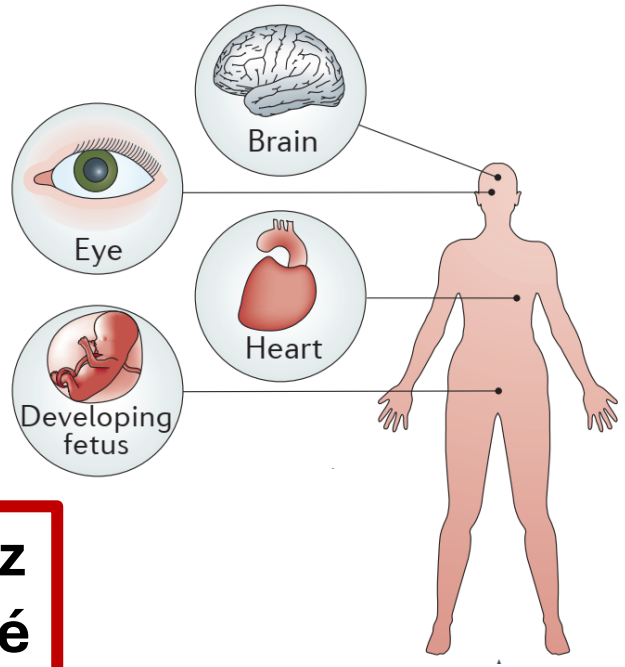
10% asthénie, fièvre, ADP, choriorétinite…

90% asymptomatique

Passage transplacentaire

Toxoplasmose congénitale

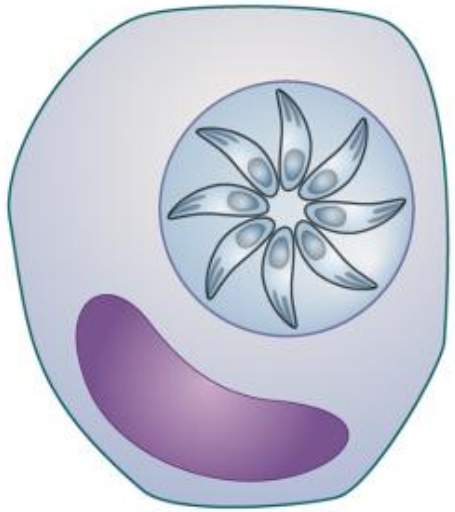
Infection latente



Réactivation chez l'immunodéprimé

Adapté de *Montoya Lancet 2004* et *Hunter Nat Rev Microbiol 2012*

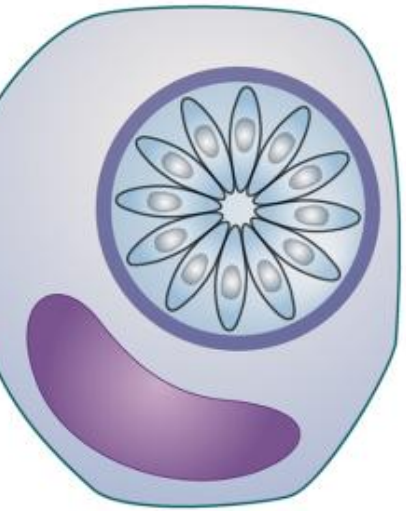
Physiopathologie de la toxoplasmose



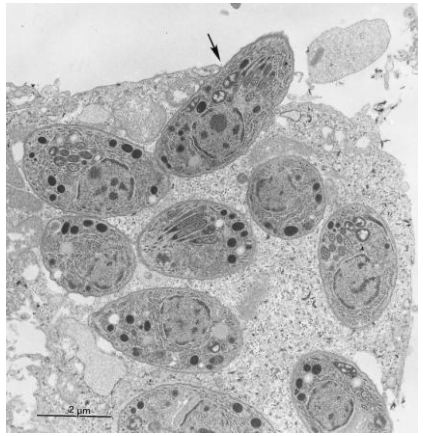
Tachyzoites

Pression immunitaire

TNF-α, **IFN-γ** (Th1)



Bradyzoite cyst

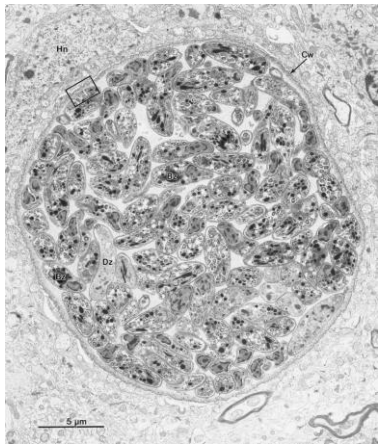


Infection active

Réactivation

déficit immunité cellulaire

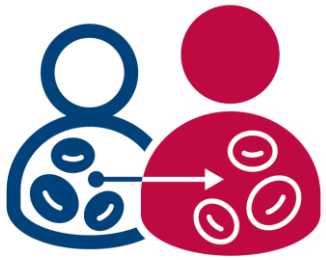
mécanisme exact ?



Infection latente

A VIE

Adapté de *Dubey Clin Microbiol Rev 1998 – Zhang Eukaryot Cell 2013 – Sullivan FEMS Microbiol Rev 2012*



Réactivation d'une infection latente (**R+**)

greffe de CSH >>> SOT (R+)

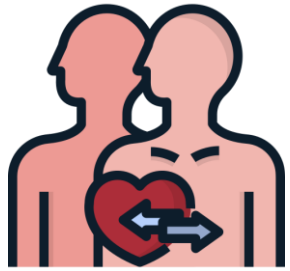
allo >>>> auto

Primo-infection (R-)

transmission/**greffon solide (D+)**

= *réactivation d'une infection latente « exogène »*

Cœur > autres SOT

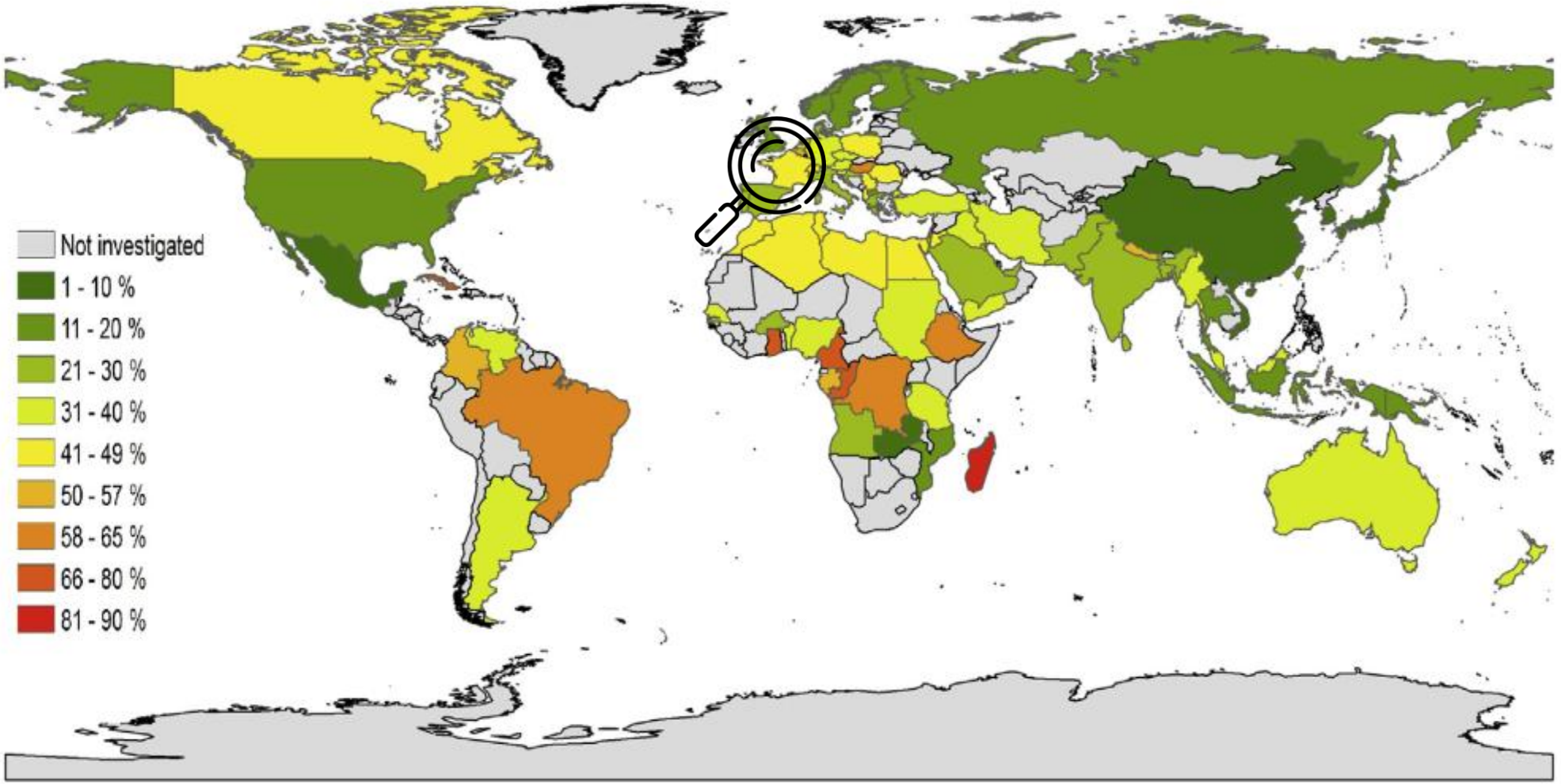


alimentation

produits sanguins

Séroprévalence *de la toxoplasmose dans le monde*

Global prevalence of latent toxoplasmosis in pregnant women: a systematic review and meta-analysis



Rostami Clin Microbiol Infect 2020

Le risque de toxoplasmose en contexte de transplantation va diminuer…

En 2013 :
Séroprévalence globale 54,7%
contre 64,5% en 1997

Continuous Decline of *Toxoplasma gondii* Seroprevalence in Hospital: A 1997–2014 Longitudinal Study in Paris, France

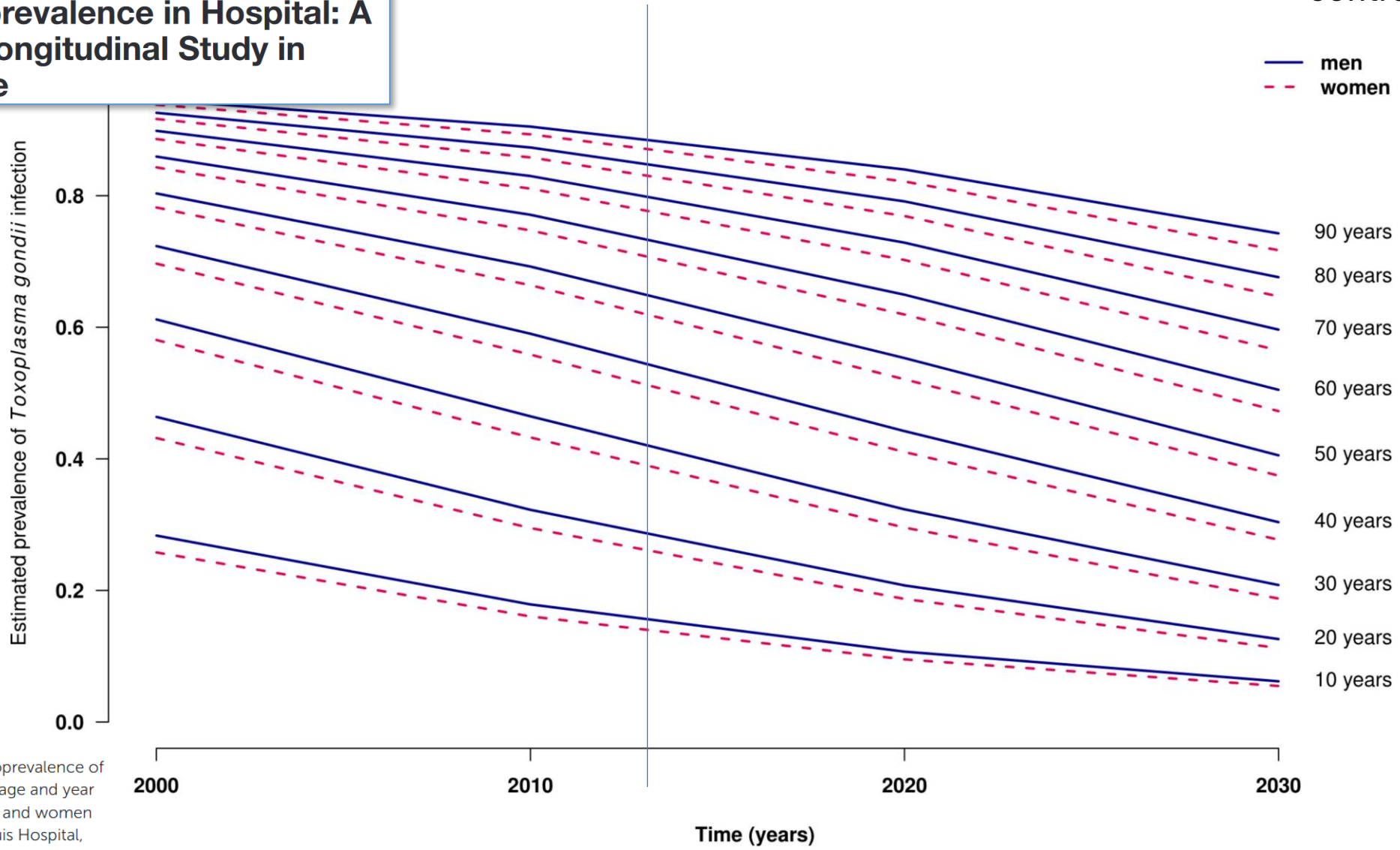
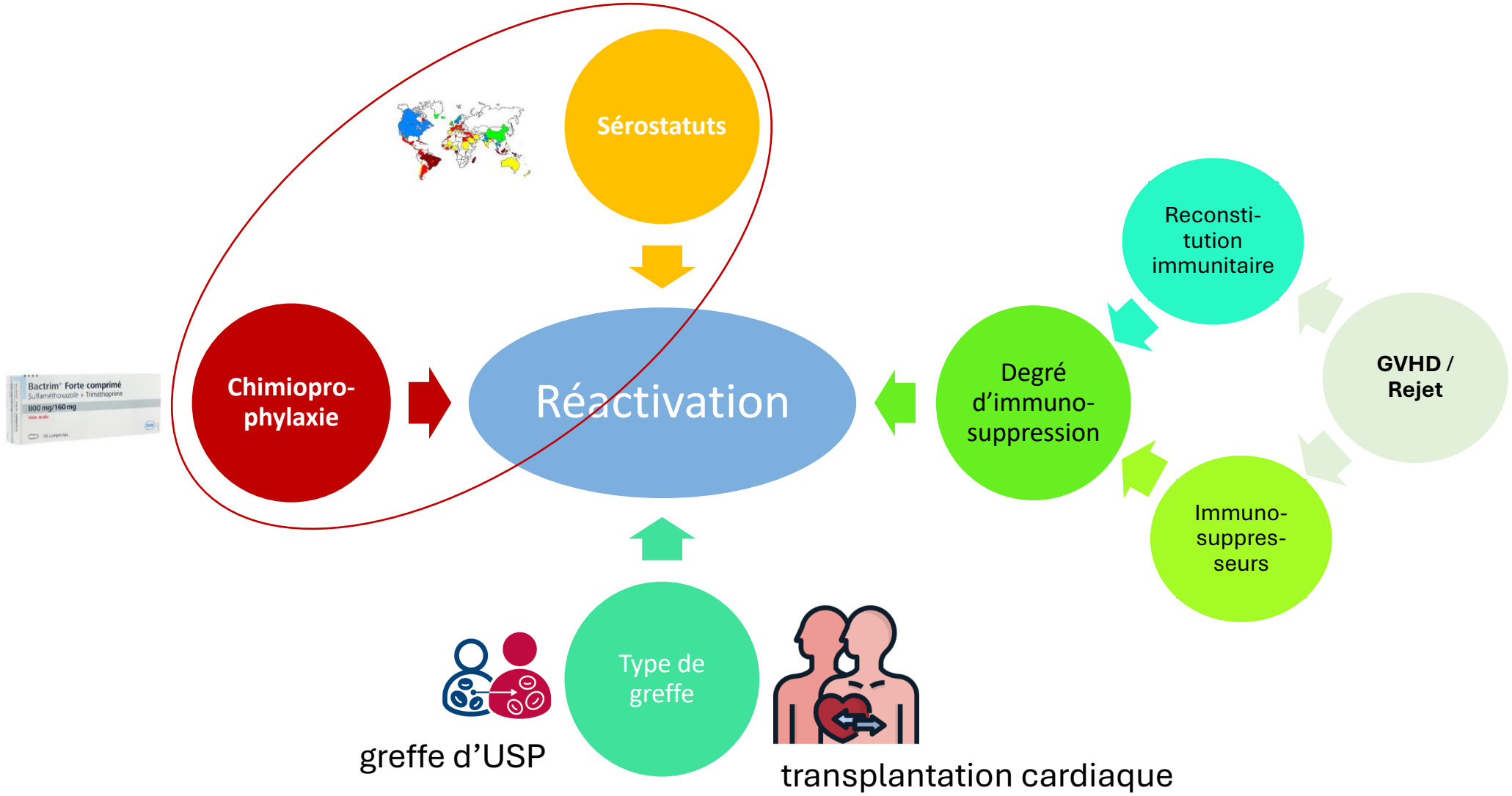


FIGURE 3. Estimated seroprevalence of *Toxoplasma* infection by age and year among men (solid curve) and women (dashed curve), Saint-Louis Hospital, France, 2000–2030.

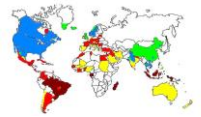
Guigue Front Microbiol 2018

Toxoplasmose ***en contexte de transplantation*** *: facteurs de risque*



Derouin CID 1992 – Orr J Infect 1994 – Bretagne TID 2000 – Martino CID 2000 – De Medeiros TID 2001 – Muñoz CID 2003 – Martino CID 2005 – Meers CID 2010 – Bautista TID 2012 – Fernandez-Sabé CID 2012 – Gajurel COID 2015 – Conrad CMI 2016 – Robin BBMT 2019 – Paccoud BMT 2020

Toxoplasmose ***chez l'allogreffé de CSH*** *: une infection pas si rare !*



Toxoplasmosis Among 38 751 Hematopoietic Stem-cell Transplant Recipients: A Systematic Review of Disease Prevalence and a Compilation of Imaging and Autopsy Findings

variable :
-séroprévalence (R+)
-prophylaxie
-suivi PCR sanguine

Prevalence of *Toxoplasmosis* among HSCT recipients

	No. of studies (No. of datasets)	No. of *Toxoplasmosis* cases/No. of HSCT recipients	Prevalence of toxoplasmosis among HSCT recipients across studies (median prevalence across studies; IQR; range)
Overall[a]			
Toxoplasmosis among all HSCT	46 (47)	399/38 751	2.14% (0.76%–4.06%; 0%–66.67%)
Among all HSCT			
Toxoplasma infection cases among HSCT recipients	33 (33)	93/32 493	0% (0%–2.63%, 0%–33.33%)
Toxoplasma disease cases among HSCT recipients	46 (47)	301/38 751	1.82% (0.36%–3.03%; 0%–33.33%)
Among R^+HSCT			
Toxoplasma infection cases among R^+HSCT recipients	20 (20	53/2075	0% (0%–3.57%; 0%–40%)
Toxoplasma disease cases among R^+HSCT recipients	24 (24)	110/2271	5.66% (3.03%–9.84%; 0%–40%)

n=106 R+, suivi prospectif
TI 16%
EBMT TD 6% (38% si TI)

Early Detection of *Toxoplasma* Infection by Molecular Monitoring of *Toxoplasma gondii* in Peripheral Blood Samples after Allogeneic Stem Cell Transplantation

Contopoulos-Ioannidis Transplantation 2021 – Martino Clin Infect Dis 2005

Sérologie prélevée au début de la maladie +++

1. Connaître le sérostatut R/D

2. Monitoring PCR sanguine (HSCT R+)

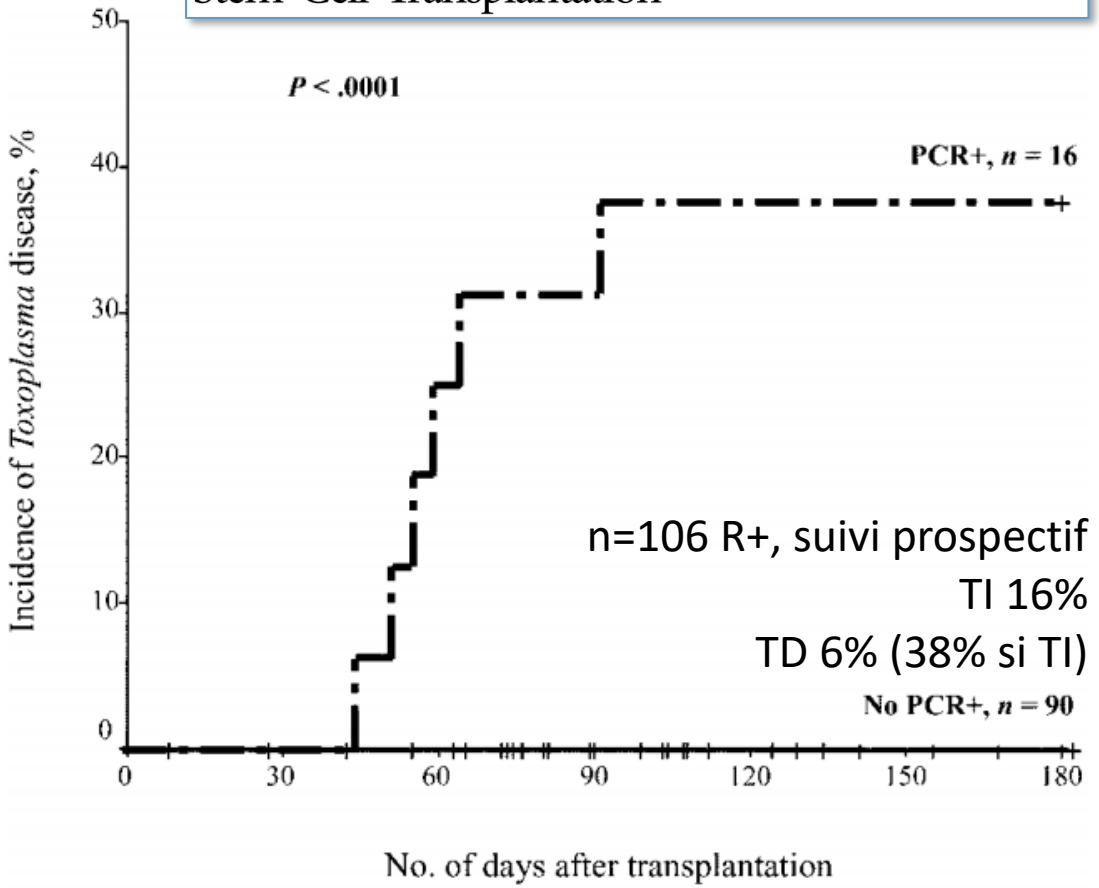
3. Chimioprophylaxie (HSCT R+, SOT D+/R-)

4. RHD – prévention primo-infection (R-)

Prévention de la toxoplasmose
après allo-CSH : stratégie pré-emptive

2. Monitoring PCR sanguine (HSCT R+)

Early Detection of *Toxoplasma* Infection by Molecular Monitoring of *Toxoplasma gondii* in Peripheral Blood Samples after Allogeneic Stem Cell Transplantation



n=106 R+, suivi prospectif
TI 16%
TD 6% (38% si TI)

- **monitoring hebdomadaire de la PCR sanguine chez R+ (HSCT)**
- **si PCR +** : contrôler la PCR + bilan à la recherche d'atteinte organique

imagerie cérébrale
scanner thoracique
FO
ECG, troponine

ATTENTION
possibilité de FN
(PCR négative malgré maladie)

- **si PCR+ : traitement précoce de la toxoplasmose**

Martino Clin Infect Dis 2005 – Montoya Transplant Infections DOI 10.1007/978-3-319-28797-3_43 – Aerts Clin Microbiol Infect 2021 – Aerts Lancet Infect Dis 2024

Prévention de la toxoplasmose ***après allo-CSH : stratégie pré-emptive***

Molecular Diagnosis of Toxoplasmosis in Immunocompromised Patients: a 3-Year Multicenter Retrospective Study

TABLE 4 *Toxoplasma* DNA detection in allo-HSCT patients according to PCR follow-up policy[a]

Characteristic	Result for centers with: PCR follow-up (6 centers)	No PCR follow-up (5 centers)	*P* value[c]
Symptomatic PCR$^+$ patients			
Total no. PCR+ patients	33	16	
No. detected/no. engrafted (%, mean ± SEM)	2.8 ± 0.9	1.7 ± 0.6	0.329 (NS)
No. (%) with:			
Disseminated toxoplasmosis	21 (64)	9 (56)	0.756 (NS)
Cerebral toxoplasmosis	8 (24)	4 (25)	1 (NS)
Isolated fever	3 (9)	2 (13)	0.672 (NS)
Ocular toxoplasmosis	1 (3)	1 (6)	1 (NS)
No. (%) that survived	25 (76)	8 (50)	0.106 (NS)
Overall survival (%) of the 72 patients	48 (86)	8 (50)	0.005**

HSCT : meilleure survie grâce à un diagnostic + traitement précoce

Martino Clin Infect Dis 2005 – Robert-Gangneux J Clin Microbiol 2015 – Conrad Clin Microbiol Infect 2016 – Robin BBMT 2019

Prévention de la toxoplasmose ***après allo-CSH : recommandations***

Guidelines for the management of *Toxoplasma gondii* infection and disease in patients with haematological malignancies and after haematopoietic stem-cell transplantation: guidelines from the 9th European Conference on Infections in Leukaemia, 2022

Recommendations for toxoplasma qPCR screening

(1)	qPCR screening is recommended for allogeneic seropositive (R-positive) HSCT recipients	
(1a)	Before engraftment	A, II, u
(1b)	After engraftment if no prophylaxis or any alternative prophylaxis to trimethoprim–sulfamethoxazole is given or in case of poor compliance or absorption of trimethoprim–sulfamethoxazole	A, II, u
(1c)	After engraftment if prophylaxis with appropriate doses of trimethoprim–sulfamethoxazole is given	B, II, u
(2)	Screening is not recommended in D-positive and R-negative or in D-negative and R-negative patients	No grade
(3)	The screening should start from transplant (day 0)	A, II, u
(4)	The screening should be at least once per week until day 100, then at least every 2 weeks until day 180, adapted to the schedule of patient follow-up and the intensity of immunosuppression	B, II, u
(5)	HSCT recipients who have developed toxoplasma infection or disease identified with qPCR should be monitored at least once a week to check for the decrease of the parasitic load under treatment	A, II, u
(6)	Two consecutive negative tests in blood, 7 days apart, and at least one in any other previously qPCR-positive fluid is the minimal requirement to confirm the efficacy of treatment of toxoplasma infection and disease	B, II, u

complication volontiers précoce !

Aerts Lancet Infect Dis 2024

Prévention de la toxoplasmose ***après transplantation*** **Pas d'essais randomisés contrôlés**

3. Chimioprophylaxie (HSCT R+, SOT D+/R-)

✓**Triméthoprime-Sulfaméthoxazole** : 400/80 mg/j ou 800/160 mgx3/semaine (ECIL : A II)

✓ Atovaquone : 1500 mg/j (ECIL : C III)

Risque d'échec +++ ⚠

✓ Pyriméthamine + (Dapsone / Azithromycine / Clindamycine / Sulfadiazine…)

Guidelines for the management of *Toxoplasma gondii* infection and disease in patients with haematological malignancies and after haematopoietic stem-cell transplantation: guidelines from the 9th European Conference on Infections in Leukaemia, 2022

Recommendations for toxoplasma primary prophylaxis		
(1)	All seropositive (R-positive) patients before transplant should receive primary toxoplasma prophylaxis	A, II, t, u
(2)	On the basis of the HIV trials and limited experience in HSCT patients, oral or intravenous trimethoprim–sulfamethoxazole (80–400 mg) per day is recommended as the first choice	A, II, t
(2a)	Alternative is trimethoprim–sulfamethoxazole 160 mg and 800 mg, three times per week regimen	A, II, t
(2b)	Any less frequent dosing or lower doses is not recommended	D, II, u
(3)	Alternate options if trimethoprim–sulfamethoxazole cannot be used	
(3a)	Pyrimethamine–sulfadiazine with folinic acid (pyrimethamine 25–50 mg/day orally plus sulfadiazine 2000–4000 mg/day orally two to four divided doses plus folinic acid 10–25 mg/day orally)	No grade
(3b)	Oral atovaquone 1500 mg/day	C, III
(3c)	Dapsone, azithromycin, or clindamycin have no or only limited activity for prevention when used alone, but can be used in combination with pyrimethamine and folinic acid	No grade
(4)	Prophylaxis should ideally be started as soon as feasible after transplant, but no later than neutrophil engraftment	A, II, u
(5)	Given the potential for marrow toxicity, it is advised not to start trimethoprim–sulfamethoxazole prophylaxis during the pre-engraftment period	B, II, t
(6)	If engraftment is delayed and trimethoprim–sulfamethoxazole cannot be used due to myelosuppression or no PCR screening is available, atovaquone 1500 mg daily can be considered until engraftment followed by trimethoprim–sulfamethoxazole	C, III
(7a)	The duration of toxoplasma prophylaxis should be at least 6 months and extended during treatment-induced immunosuppression; or, in patients who no longer receive immunosuppressive drugs: until the CD4 cell count significantly increases	B, II, u
(7b)	Both toxoplasmosis and *P jirovecii* pneumonia prophylaxis should have the same duration in an individual patient	C, III

La Hoz Clin Transplant 2019 – Rauwolf Clin Microbiol Infect 2021 – Aerts Lancet Infect Dis 2024 – Jung Ann Pharmacother 2025

3. Chimioprophylaxie (HSCT R+, SOT D+/R-)

Cotrimoxazole myelotoxicity in hematopoietic SCT recipients: time for reappraisal

Failure of atovaquone prophylaxis for prevention of toxoplasmosis in hematopoietic cell transplant recipients

Features of *Toxoplasma gondii* reactivation after allogeneic hematopoietic stem-cell transplantation in a high seroprevalence setting n=16 dont 38% sous atovaquone

Fontanet BMT 2011 – Paccoud BMT 2020 – Chueng Transpl Infect Dis 2020 – Jung Ann Pharmacother 2025

3. Chimioprophylaxie (HSCT R+, SOT D+/R-)

	HSCT (R+)	SOT (D+/R-)
quand débuter ?	non consensuel dès le conditionnement / après la prise de greffe	dès la transplantation (cardiaque)
quand arrêter ?	≥ 6 mois / à moduler selon le niveau d'immunodépression	≥ 6 mois – 1 an voire à vie, chez le transplanté cardiaque
quand reprendre ?	en cas de majoration de l'immunosuppression	
place du suivi PCR	en l'absence de prophylaxie / en association à la prophylaxie	en l'absence de prophylaxie chez le transplanté cardiaque D+/R-

Tissue and blood protozoa including toxoplasmosis, Chagas disease, leishmaniasis, *Babesia*, *Acanthamoeba*, *Balamuthia*, and *Naegleria* in solid organ transplant recipients— Guidelines from the American Society of Transplantation Infectious Diseases Community of Practice

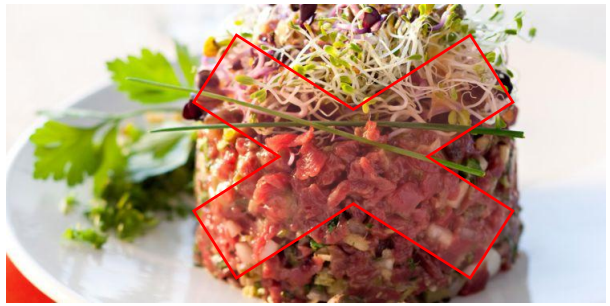
Guidelines for the management of *Toxoplasma gondii* infection and disease in patients with haematological malignancies and after haematopoietic stem-cell transplantation: guidelines from the 9th European Conference on Infections in Leukaemia, 2022

Toxoplasmosis after allogeneic haematopoietic cell transplantation—disease burden and approaches to diagnosis, prevention and management in adults and children

La prophylaxie anti-Toxoplasma n'est pas « juste » un effet collatéral de la prophylaxie anti-Pneumocystis !

Rauwolf Clin Microbiol Infect 2021 – La Hoz Clin Transplant 2019 – Montoya Transplant Infections DOI 10.1007/978-3-319-28797-3_43 – Aerts Clin Microbiol Infect 2021 – Aerts Lancet Infect Dis 2025 – Hanisch Pediatr Transplant 2025

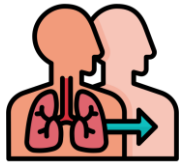
4. RHD – prévention primo-infection (R-)



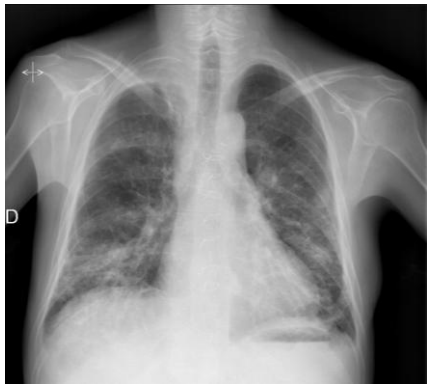




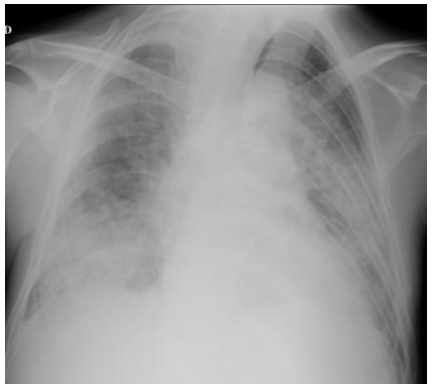
- lavage des mains, port de gants pour jardinage
- lavage des mains après contact avec les chats, port de gants (litière)
- nettoyage des surfaces et ustensiles, mains
- nettoyage des fruits et légumes, herbes aromatiques
- cuisson de la viande à cœur / congélation de la viande (≥ 2 semaines)
- éviter poissons et viandes crus, salés, fumés
- …



X, 30 ans
Transplantation cœur-poumons
Basiliximab ; tacrolimus-MMF-prednisone
CMV R-/D- ; EBV R+/D+ ; **toxoplasmose R-/D+**
Prophylaxie : Voriconazole

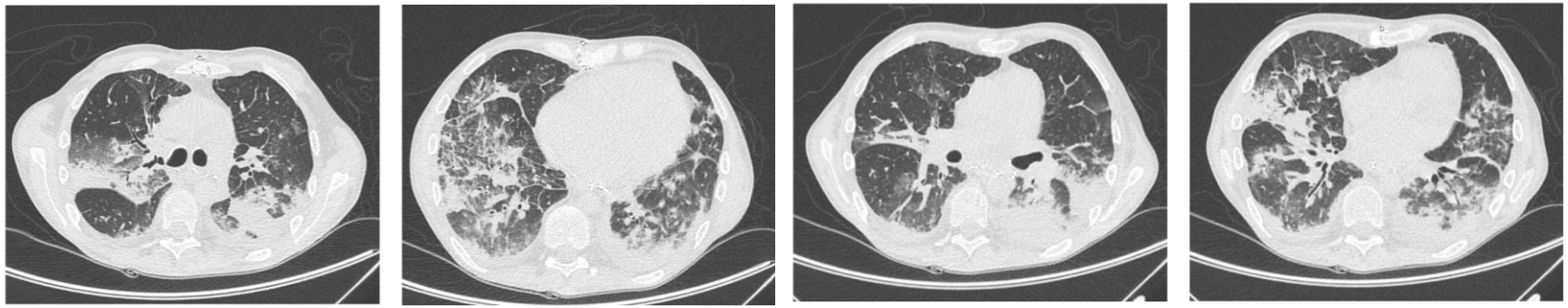


→ M+2 : dyspnée fébrile ➔ Hospitalisation
Antibiothérapie probabiliste pip-tazo + ciprofloxacine



→ J+3 : choc septique + SDRA ➔ Réa

PCR toxoplasmose positive sang + LBA



Présentation clinique de la toxoplasmose ***après transplantation*** *: atteinte pulmonaire*

principale manifestation chez l'immunodéprimé non-VIH

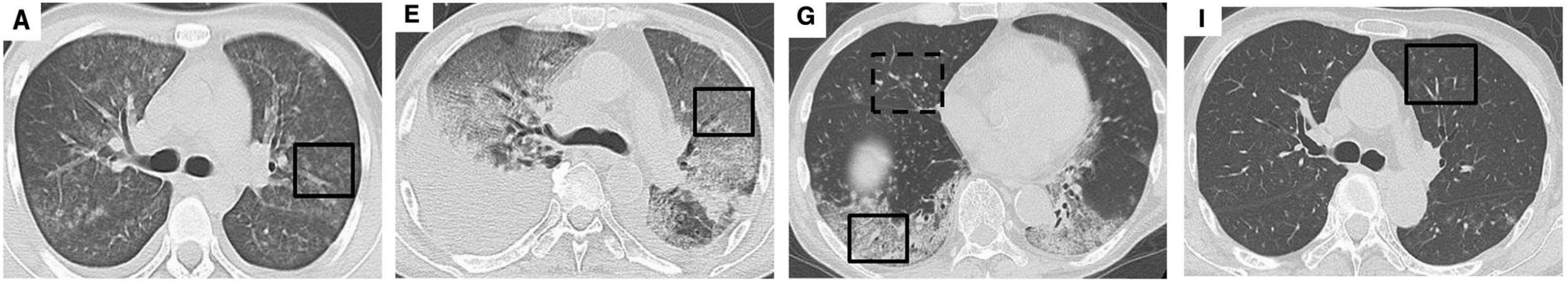
isolée ↔ maladie disséminée

peu symptomatique ↔ SDRA

Diagnostic différentiel : pneumocystose, pneumonie à CMV…

Clinical characteristics and computed tomography findings of pulmonary toxoplasmosis after hematopoietic stem cell transplantation

verre dépoli, crazy paving, condensations, épanchement pleural…



Fernandez-Sabé Clin Infect Dis 2012 – Schmidt Clin Infect Dis 2013 – Robert-Gangneux JCM 2015 – Sumi Int J Hematol 2016

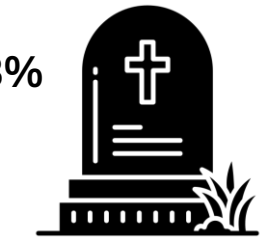
Particularités de la toxoplasmose ***chez le transplanté d'organe solide***

Risk Factors, Clinical Features, and Outcomes of Toxoplasmosis in Solid-Organ Transplant Recipients: A Matched Case-Control Study

n=22 (soit 0,14% des SOT-R)

délai médian 92 jours
(range, 12-7097)

mortalité 13%



peut mimer un rejet aigu (greffe cardiaque)

Table 3. Clinical Characteristics, Treatment, and Outcomes of 22 Solid-Organ Transplant Recipients With Toxoplasmosis

Variable	Patients, No. (%)	
Male sex	16	(72.7)
Age, years, median (range)	50.02	(20–68)
Transplant		
Heart	12	(54.5)
Kidney	6	(27.2)
Liver	4	(18.2)
Site of *Toxoplasma* infection		
Pneumonitis	7	(31.8)
Myocarditis	5	(22.7)
Brain abscesses	5	(22.7)
Chorioretinitis	3	13.6
Meningitis	1	(4.5)
Disseminated disease	5	(22.7)

Campbell Transplantation 2006 – Fernàndez-Sabé Clin Infect Dis 2012 – Ramanan Transplant Infect Dis 2020

Traitement curatif de la toxoplasmose ***après transplantation*** **Pas d'essais randomisés contrôlés**

≈

VIH

Toxo-maladie :
Durée ≥ 6 semaines

Toxo-infection :
3 semaines / 2 PCR hebdo négatives

Prophylaxie secondaire

+ suivi négativation PCR

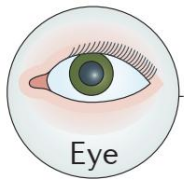
Baisser IS quand possible

Treatment of Toxoplasmosis: Historical Perspective, Animal Models, and Current Clinical Practice

TABLE 2 Treatment of toxoplasmosis in immunocompromised patients

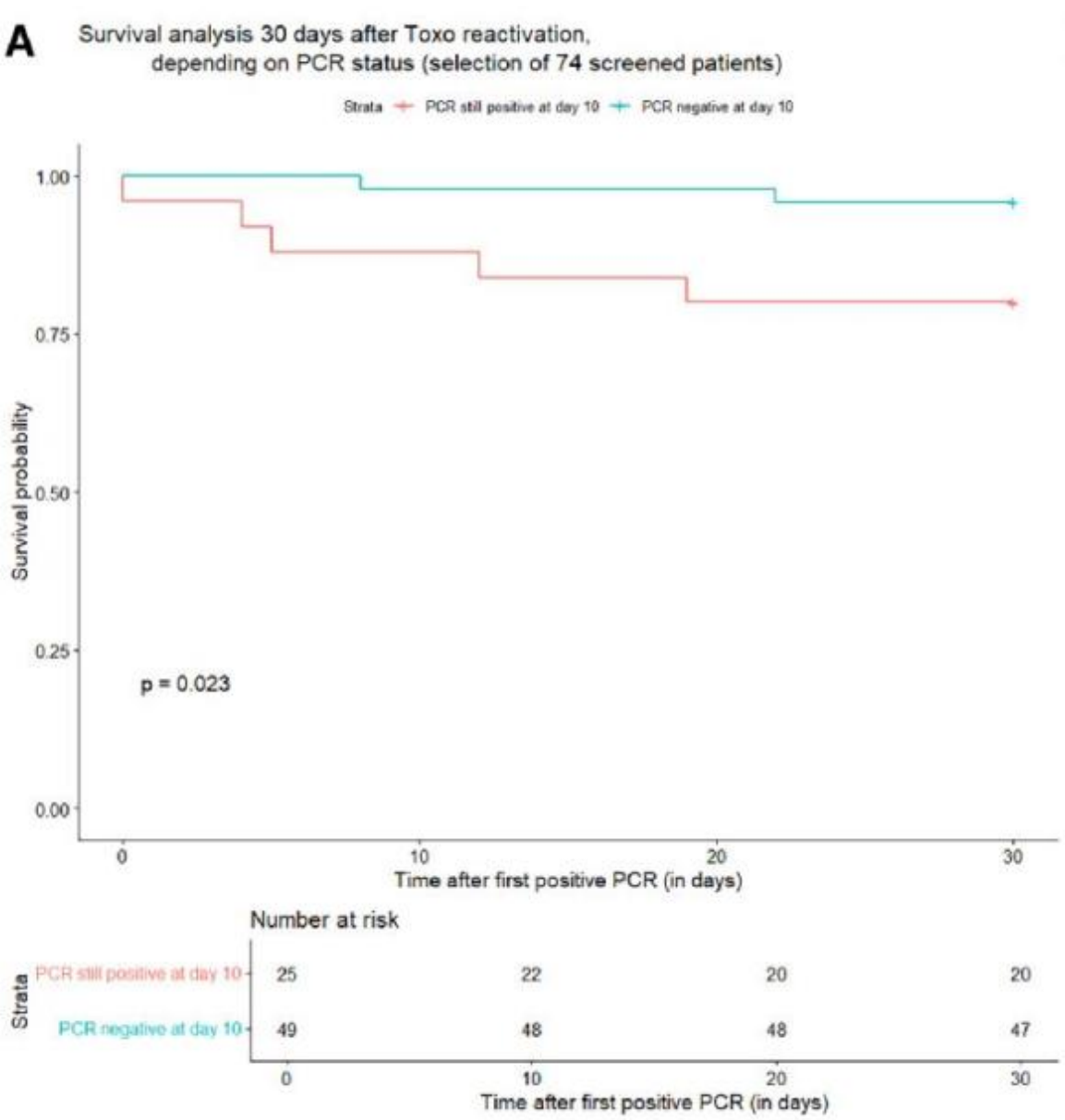
Induction therapy	Maintenance therapy
For those with body wt of ≥60 kg, pyrimethamine (200 mg once and then 75 mg daily) plus sulfadiazine (1.5 g q6h) plus folinic acid (10–50 mg daily)	Pyrimethamine (50 mg daily) plus sulfadiazine (1 g q6h) plus folinic acid (10–25 mg daily)
For those with body wt of <60 kg, pyrimethamine (200 mg once and then 50 mg daily) plus sulfadiazine (1 g q6h) plus folinic acid (10–50 mg daily)	Pyrimethamine (25 mg daily) plus sulfadiazine (0.5 g q6h) plus folinic acid (10–25 mg daily)
Pyrimethamine plus folinic acid (dosing as described above) plus clindamycin (600 mg q6h) + prophylaxie *Pneumocystis*	Pyrimethamine plus folinic acid (dosing as described above) plus clindamycin (600 mg q8h)
TMP-SMX (10/50 mg/kg/day[a] in divided doses)	TMP-SMX (5/25 mg/kg/day in divided doses)
Atovaquone (1,500 mg twice daily) ± pyrimethamine plus folinic acid (dosing as described above)	Atovaquone (750–1,500 mg twice daily) ± pyrimethamine plus folinic acid (dosing as described above)
Atovaquone plus sulfadiazine (dosing as described above)	Atovaquone plus sulfadiazine (dosing as described above)
Pyrimethamine plus folinic acid (dosing as described above) plus azithromycin[b] (1,000 mg daily)	Pyrimethamine plus azithromycin not recommended due to a high relapse rate; one of the above regimens should be used instead

[a]Higher doses of 15/75 or 20/100 mg/kg/day can be used.



Dunay CMR 2018 – Patrat-Delon J Clin Microbiol 2010 – Aerts Lancet Infect Dis 2024

Rôle de la PCR quantitative pour guider le traitement pré-emptif/curatif de la toxoplasmose ***après allo-CSH***



Toxoplasma qPCR Kinetics to Guide Preemptive Treatment of Toxoplasmosis After Allogeneic Hematopoietic Stem Cell Transplantation

n=85 allogreffés
TI n=71 ; TD n=14

Aerts Clin Infect Dis 2024

Conclusion

- ✓ Réactivation d'infection latente (transmise par le greffon en cas de SOT)
- ✓ **A risque : allogreffe de CSH (R+) >>> SOT (D+/R- ; cœur +++)**
- ✓ Toxoplasmose "infection" → "maladie" (sévérité clinique)

- ✓ Présentation clinique ***différente*** de celle rencontrée chez les PVVIH : **atteinte pulmonaire, atteinte disséminée**, atteinte SNC, SAM
- ✓ Diagnostic = PCR +++, histo

- ✓ PREVENTION +++ :
  - ✓ **prophylaxie par TMP-SMX**
  - ✓ suivi PCR sanguine chez les patients à risque

- ✓ Traitement curatif ≥ 6 semaines : cf. VIH

- ✓ *Avant d'arrêter le Bactrim chez un transplanté présentant une pneumonie interstitielle, se poser la question s'il peut s'agir d'une toxoplasmose !*

Lectures conseillées

Toxoplasmosis after allogeneic haematopoietic cell transplantation—disease burden and approaches to diagnosis, prevention and management in adults and children

Kerstin K. Rauwolf [1, 2], Matthias Floeth [2, 3], Kornelius Kerl [1, 2], Frieder Schaumburg [4], Andreas H. Groll [1, 2, *]

Toxoplasmosis Among 38751 Hematopoietic Stem-cell Transplant Recipients: A Systematic Review of Disease Prevalence and a Compilation of Imaging and Autopsy Findings

Despina G. Contopoulos-Ioannidis, MD,[1,2] Stephanie M. Cho, MS,[3] Alice Bertaina, MD, PhD,[4] Ann N. Leung, MD,[5] Nancy Fischbein, MD,[6] Bryan Lanzman, MD,[6] Hayden T. Schwenk, MD, MPH,[1] and Jose G. Montoya, MD[2]

Transplantation ■ December 2021 ■ Volume 105 ■ Number 12

Guidelines for the management of *Toxoplasma gondii* infection and disease in patients with haematological malignancies and after haematopoietic stem-cell transplantation: guidelines from the 9th European Conference on Infections in Leukaemia, 2022

Toxoplasmosis in Transplant Recipients, Europe, 2010–2014

Treatment of Toxoplasmosis: Historical Perspective, Animal Models, and Current Clinical Practice

Clinical Microbiology Reviews®

Ildiko Rita Dunay,[a] Kiran Gajurel,[b] Reshika Dhakal,[c] Oliver Liesenfeld,[d*] Jose G. Montoya[e,f]

A titre de comparaison : prophylaxie primaire de la toxoplasmose ***chez la PVVIH***

Opportunistic Infections	Indication	Preferred	Alternative
Toxoplasma gondii **encephalitis**	Toxoplasma IgG-positive patients with CD4 count <100 cells/µL **(AII)** **Note:** All regimens recommended for primary prophylaxis against toxoplasmosis also are effective as PCP prophylaxis.	TMP-SMX[a] 1 DS PO daily **(AII)**	• TMP-SMX[c] 1 DS PO three times weekly **(BIII)**, *or* • TMP-SMX[c] 1 SS PO daily **(BIII)**, *or* • Dapsone[d] 50 mg PO daily plus (pyrimethamine[e] 50 mg plus leucovorin 25 mg) PO weekly **(BI)**, *or* • (Dapsone[d] 200 mg plus pyrimethamine[e] 75 mg plus leucovorin 25 mg) PO weekly **(BI)**, *or* • Atovaquone 1500 mg PO daily **(CIII)**, *or* • (Atovaquone 1500 mg plus pyrimethamine[e] 25 mg plus leucovorin 10 mg) PO daily **(CIII)**

Guidelines for the Prevention and Treatment of Opportunistic Infections in Adults and Adolescents with HIV

https://clinicalinfo.hiv.gov/sites/default/files/guidelines/documents/adult-adolescent-oi/tables-adult-adolescent-oi.pdf

A titre de comparaison : traitement curatif de la toxoplasmose ***chez la PVVIH***

Tableau 2 : Recommandations thérapeutiques de la toxoplasmose cérébrale

	Traitement d'attaque	Prophylaxie secondaire
Durée	6 semaines	Jusqu'à CD4 >200/µL et CV indétectable >6 mois
Première intention	trimethoprime/sulfamethoxazole 15/75 mg/kg/j en 3 prises	trimethoprime/sulfamethoxazole 1 cp à 160/800 mg/j
Deuxième intention	pyrimethamine* 100 mg à J1 puis 50 mg/j + sulfadiazine** 100 mg/kg/j (sans dépasser 6g/j)	– trimethoprime/sulfamethoxazole 1 cp à 160/800 mg/j – pyrimethamine* 25 mg/j + sulfadiazine** 50mg/kg/j
Alternatives	– clindamycine 600 mg x 4/j et pyrimethamine* 100 mg à J1 puis 50 mg/j ; ajouter une prophylaxie de la pneumocystose – atovaquone 1500 mg x 2/j [hors AMM] et pyrimethamine* 100 mg à J1 puis 50 mg/j	– clindamycine 600 mg x 2 à 3/j et pyrimethamine* 25 mg/j ; ajouter une prophylaxie de la pneumocystose – atovaquone 1500 mg/j [hors AMM]

* La pyrimethamine doit être associée à 25 mg 3x/sem d'acide folinique

** La sulfadiazine doit être associée à une alcalinisation des urines

RECOMMANDATION

Prise en charge des complications infectieuses associées à l'infection par le VIH

HAS HAUTE AUTORITÉ DE SANTÉ — anrs MALADIES INFECTIEUSES ÉMERGENTES Inserm — CNS Conseil national du sida et des hépatites virales

https://www.has-sante.fr/upload/docs/application/pdf/2024-07/reco484_recommandations_vih_complications_cd_20240627_pd_ap.pdf - *https://clinicalinfo.hiv.gov/en/guidelines/hiv-clinical-guidelines-adult-and-adolescent-opportunistic-infections/toxoplasma-gondii?view=full*