



Mycobactéries et bronchectasies : prise en charge globale (hors antibiotiques)

Claire Andréjak

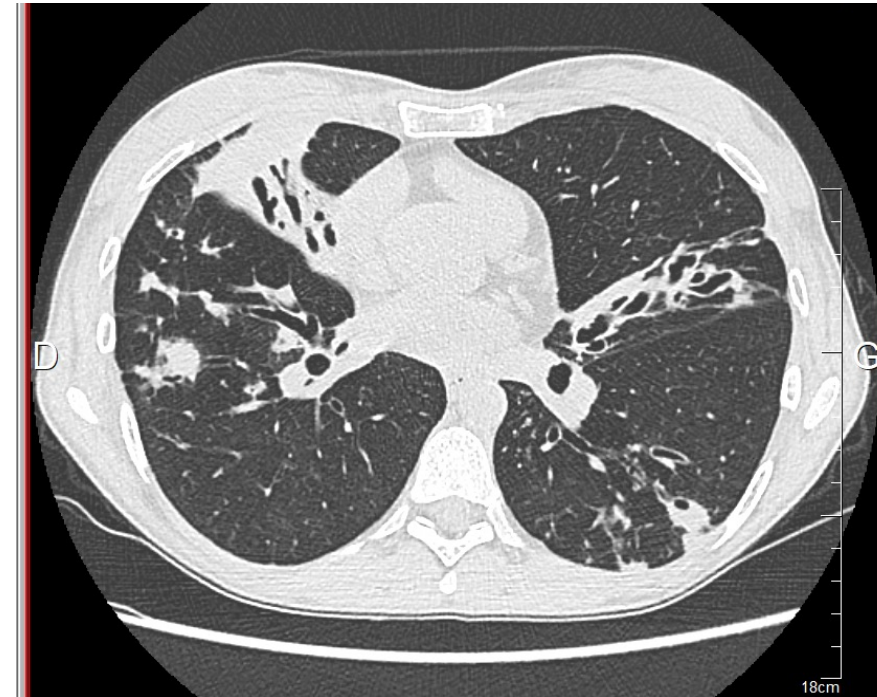


Commençons avec une patiente...



Mme G, vous est adressée en consultation pour « mycobactérie »

- Elle a 75 ans, vous explique qu'elle tousse et qu'elle crache régulièrement depuis des années. Depuis quelques mois, elle enchaîne les bronchites... Son médecin traitant l'a mis 4 fois sous antibiotiques mais elle en a marre. C'est dans ce cadre que vous la voyez.
- Elle n'a aucun antécédent particulier, hormis ses bronchites.
- Elle a un pectus excavatum, une cyphoscoliose
- Elle est sous une association corticoïde inhalée et bêta2mimétique prescrit depuis 1 an par son MT
- **Voici son scanner.**



Que lui proposez vous ?

- ECBC à la recherche de germes banals
- ECBC à la recherche d'aspergillus
- ECBC à la recherche de mycobactéries
- Fibroscopie bronchique avec recherche germes banals, mycobactéries, aspergillus
- Nouveau traitement par augmentin

Que lui proposez vous ?

- ECBC à la recherche de germes banals
- ECBC à la recherche d'aspergillus
- ECBC à la recherche de mycobactéries
- Fibroscopie bronchique avec recherche germes banals, mycobactéries, aspergillus si la patiente ne crache pas.
- Nouveau traitement par augmentin

Elle ne sait pas cracher... vous lui faites la fibroscopie.

- On retrouve du *Pseudomonas aeruginosa* à 10^7 , quelques colonies d'*Aspergillus fumigatus* (direct négatif), un *Mycobacterium avium* (direct négatif)
- Que proposez vous ?

Vous décidez de traiter le *Pseudomonas aeruginosa*...

- Vous y ajoutez de la kinésithérapie avec du drainage bronchique
- Vous faites un bilan aspergillaire
- Vous vous posez la question de traiter la mycobactérie...
- Si la patiente s'améliore ?

- Et si elle ne s'améliore pas ?

Vous décidez de traiter le *Pseudomonas aeruginosa*...

- Vous y ajoutez de la kinésithérapie avec du drainage bronchique
- Vous faites un bilan aspergillaire
- Vous vous posez la question de traiter la mycobactérie...
- Traitement antibiotique ?
- Dilatations des bronche = risque d'infections à *M. avium* ?

Chronic respiratory disease, inhaled corticosteroids and risk of non-tuberculous mycobacteriosis

Claire Andréjak,^{1,2,3,4} Rikke Nielsen,¹ Vibeke Ø Thomsen,⁵ Pierre Duhaut,^{3,6} Henrik Toft Sørensen,¹ Reimar Wernich Thomsen¹

| Exposure | Cases (n=332), n (%) | Population controls (n=3320), n (%) | Unadjusted OR (95% CI) | Adjusted OR* (95% CI) |
|---------------------------------|----------------------|-------------------------------------|------------------------|-----------------------|
| Any chronic respiratory disease | | | | |
| Absent | 165 (49.7) | 3115 (93.8) | 1.0 (ref.) | 1.0 (ref.) |
| Present | 167 (50.3) | 205 (6.2) | 18.0 (13.4 to 24.2) | 16.5 (12.2 to 22.2) |
| COPD | | | | |
| Absent | 192 (57.8) | 3161 (95.2) | 1.0 (ref.) | 1.0 (ref.) |
| Present | 140 (42.2) | 159 (4.8) | 17.4 (12.8 to 23.8) | 15.7 (11.4 to 21.5) |
| Present, first COPD diagnosis | | | | |
| Within 2 years | | | | 22.5 (13.1 to 38.5) |
| 2–5 years earlier | | | | 16.2 (9.8 to 26.7) |
| >5 years earlier | | | | 12.9 (8.58 to 19.4) |
| Present, with hospitalised | | | | |
| 0 within last year | | | | 6.3 (4.2 to 9.4) |
| 1 within last year | 28 (20.0) | 12 (7.5) | 43.9 (21.9 to 87.7) | 44.0 (21.8 to 88.9) |
| 2 within last year | 12 (8.6) | 6 (3.7) | 18.3 (5.9 to 57.0) | 17.5 (5.6 to 54.7) |
| ≥3 within last year | 34 (24.2) | 7 (4.4) | 65.2 (29.1 to 146.0) | 64.5 (28.5 to 146.2) |
| Asthma | | | | |
| Absent | 282 (84.9) | 3249 (97.9) | 1.0 (ref.) | 1.0 (ref.) |
| Present | 50 (15.1) | 71 (2.1) | 8.3 (5.6 to 12.3) | 7.8 (5.2 to 11.6) |
| Pneumoconiosis | | | | |
| Absent | 329 (99.1) | 3318 (99.9) | 1.0 (ref.) | 1.0 (ref.) |
| Present | 3 (0.9) | 3 (0.1) | 10.0 (2.0 to 49.6) | 9.8 (1.9 to 50.5) |
| Bronchiectasis | | | | |
| Absent | 314 (94.6) | 3318 (99.9) | 1.0 (ref.) | 1.0 (ref.) |
| Present | 18 (5.4) | 2 (0.06) | 174.3 (23 to 1304) | 187.5 (25 to 1417) |

Bronchectasies = haut risque d'infection à MNT



Prevalence and Clinical Characteristics of Nontuberculous Mycobacteria in Patients with Bronchiectasis: A Systematic Review and Meta-Analysis

Attention.... Isolement MNT et non pas Infection....!

Ya-nan Zhu^{a,b} Jia-qi Xie^c Xiao-wen He^c Bo Peng^c Cong-cong Wang^c
Guo-jun Zhang^c Jin-fu Xu^d Yong-hua Gao^{c,d}

| Subgroup | Study, <i>n</i> | Prevalence of NTM (95% CI) | <i>n/N</i> | Heterogeneity test, <i>I</i> ² , % | Heterogeneity test, <i>p</i> value | Egger's test, <i>t</i> | Egger's test, <i>p</i> value |
|----------------|-----------------|----------------------------|--------------|---|------------------------------------|------------------------|------------------------------|
| Overall effect | 21 | 7.7 (5.0–11.7) | 2,677/12,454 | 97.70 | <0.001 | 3.05 | 0.007 |
| Asia | 8 | 9.5 (4.6–18.7) | 1,888/9,044 | 96.85 | <0.001 | 1.38 | 0.22 |
| Europe | 9 | 5.4 (3.5–8.2) | 109/1,795 | 77.38 | <0.001 | 4.77 | 0.002 |
| North America | 1 | 50.0 (47.3–52.7) | 657/1,314 | – | – | – | – |
| Africa | 1 | 7.5 (2.4–20.8) | 3/40 | – | – | – | – |
| Oceania | 2 | 5.6 (1.2–22.3) | 20/261 | 78.31 | 0.03 | – | – |

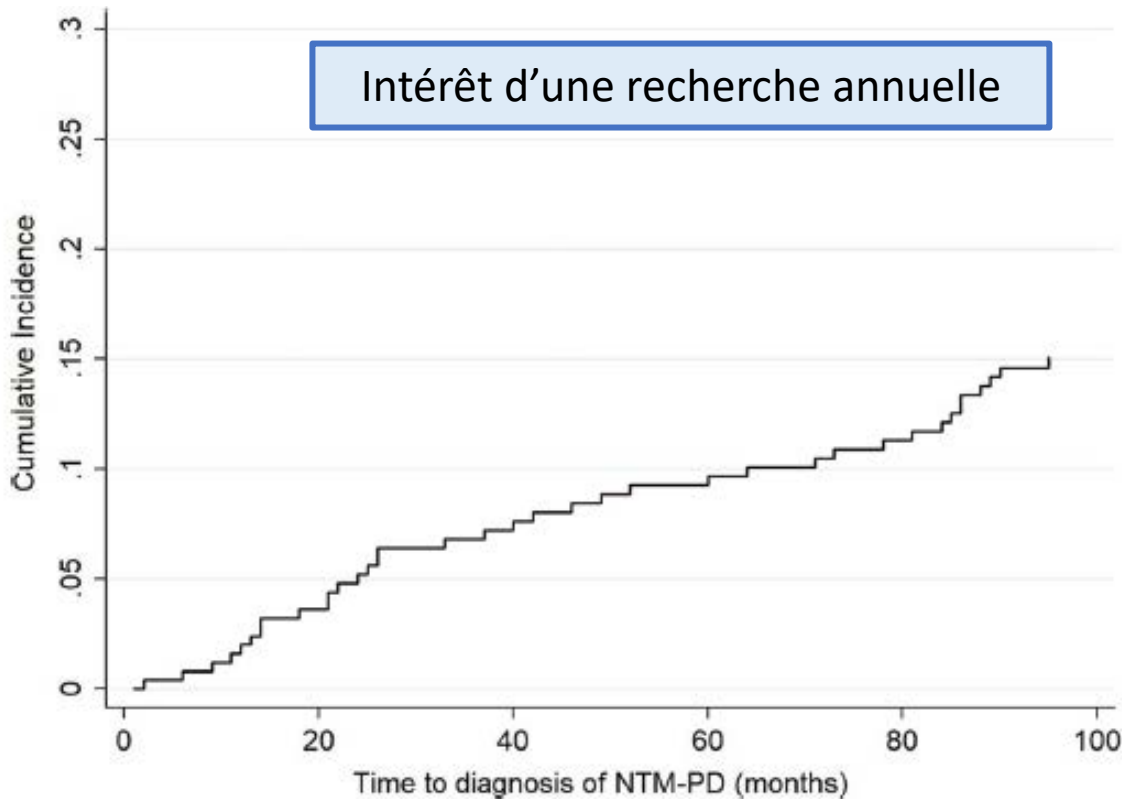
Prévalence globale des MNT : 7.7% ... mais varie entre 5.4% et 50% !
Probablement dépendant d'une recherche systématique versus recherche selon les symptômes ...

New-onset nontuberculous mycobacterial pulmonary disease in bronchiectasis: tracking the clinical and radiographic changes

BMC Pulmonary Medicine

- 221 patients dans une cohorte de patients DDB sans MNT
- Suivi 8 ans
- 14% : MNT retrouvé dans le suivi

Nakwon Kwak¹, Jong Hyuk Lee², Hyung-Jun Kim¹, Sung A. Kim¹ and Jae-Joon Yim^{1*}



| | Patients with subsequent NTM-PD (n = 31) | Patients without subsequent NTM-PD (n = 190) | P value |
|---|--|--|---------|
| Age, years, median [IQR] | 62 (50–65) | 61 (54–68) | 0.098 |
| Female, n (%) | 19 (61.3) | 67 (64.7) | 0.692 |
| Body mass index, kg/m ² median [IQR] | 21.4 (19.4–23.7) | 22.0 (19.8–24.2) | 0.419 |
| Former or current smoker, n (%) | 10 (32.3) | 36 (19.0) | 0.099 |
| Previous history of tuberculosis, n (%) | 12 (38.7) | 68 (35.8) | 0.841 |
| Chronic obstructive pulmonary disease, n (%) | 2 (6.5) | 20 (10.5) | 0.747 |
| Asthma, n (%) | 2 (6.5) | 2 (1.1) | 0.095 |
| Respiratory symptom, n (%) | 15 (48.4) | 82 (43.2) | 0.607 |
| Exacerbation during the last 1 year | | | 0.001 |
| 0 | 22 (71.0) | 128 (67.4) | |
| 1–2 | 2 (6.4) | 52 (27.4) | |
| 3 or more | 7 (22.6) | 10 (5.2) | |
| Hospital admission during the last 2 years, n (%) | 9 (29.0) | 19 (10.0) | 0.007 |
| Pseudomonas colonization, n (%) | 0 | 4 (2.1) | > 0.999 |
| Colonization with other organisms, n (%) | 2 (6.5) | 17 (9.0) | 0.646 |
| ≥3 lobes involved, n (%) | 17 (54.8) | 104 (54.7) | > 0.999 |
| Presence of cavity, n (%) | 2 (6.5) | 19 (10.0) | 0.746 |
| Bronchiectasis severity score, median [IQR] | 4 [3–5] | 4 [2, 7] | 0.963 |

NTM-PD nontuberculous mycobacterial pulmonary disease, IQR inter-quartile range

Exacerbations fréquentes = éliminer infection à MNT, surtout avant prescription CSI ou macrolides!

DDB= facteur de risque d'infection à MNT....

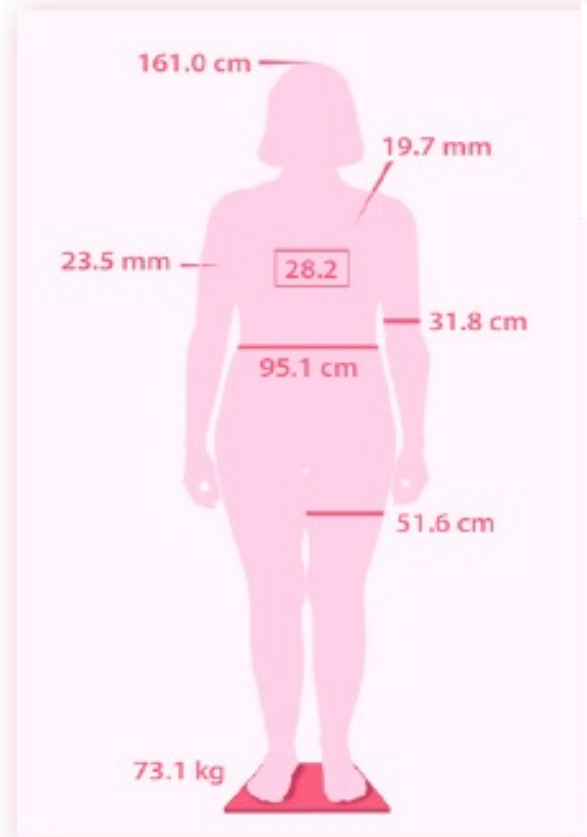
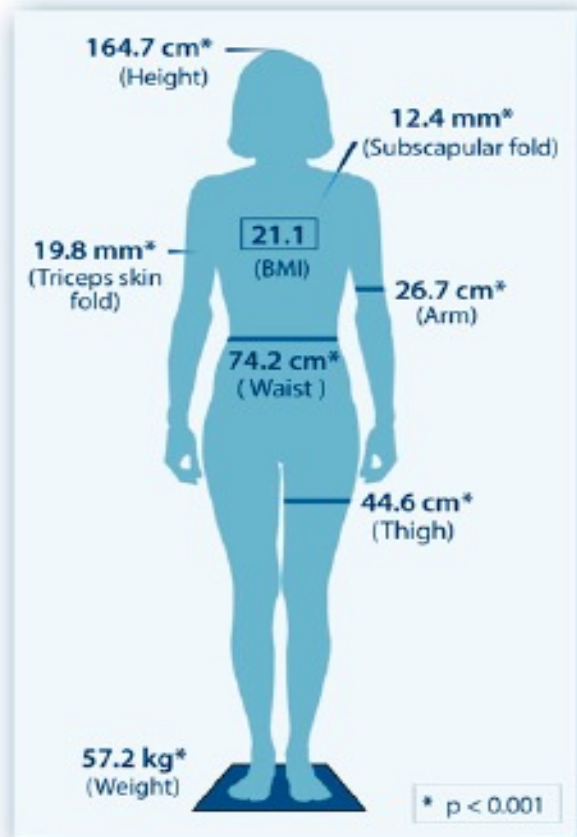
- Altération anatomique des bronches avec mauvaise clairance = primum novens de l'infection chronique à MNT
- Et/ou rôle direct des MNT pour le développement de DDB
- Lobe moyen et lingula =
 - Bronches longues et étroites, descendantes en position debout
 - Territoire en pente
 - = Drainage plus difficile
- Déformations thoraciques = Drainage plus difficile
 - Drainage difficile= Stagnation des sécrétions dans ces territoires
 - Développement DDB
 - Colonisation des MNT



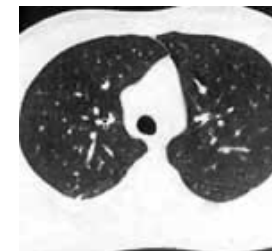
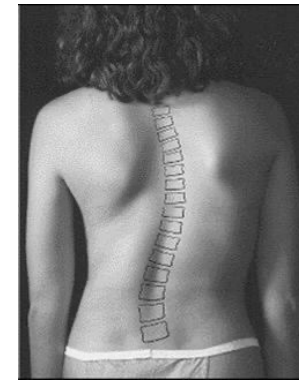
Pulmonary Nontuberculous Mycobacterial Disease

Prospective Study of a Distinct Preexisting Syndrome

Am J Respir Crit Care Med Vol 178. pp 1066–1074, 2008



Scoliose/ déformations thoraciques/ pathologies valvulaires



Qui commence un traitement antibiotique ?

Traitement antibiotique ?



- Balance bénéfice-risque
- Possible négativation spontanée
- Persistance de l'exposition
- Persistance du facteur de risque
- Mauvaise tolérance du traitement

Kiné- drainage!



Traitement antibiotique ?



- Balance bénéfice-risque
- **Possible négativation spontanée**
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Kiné- drainage!

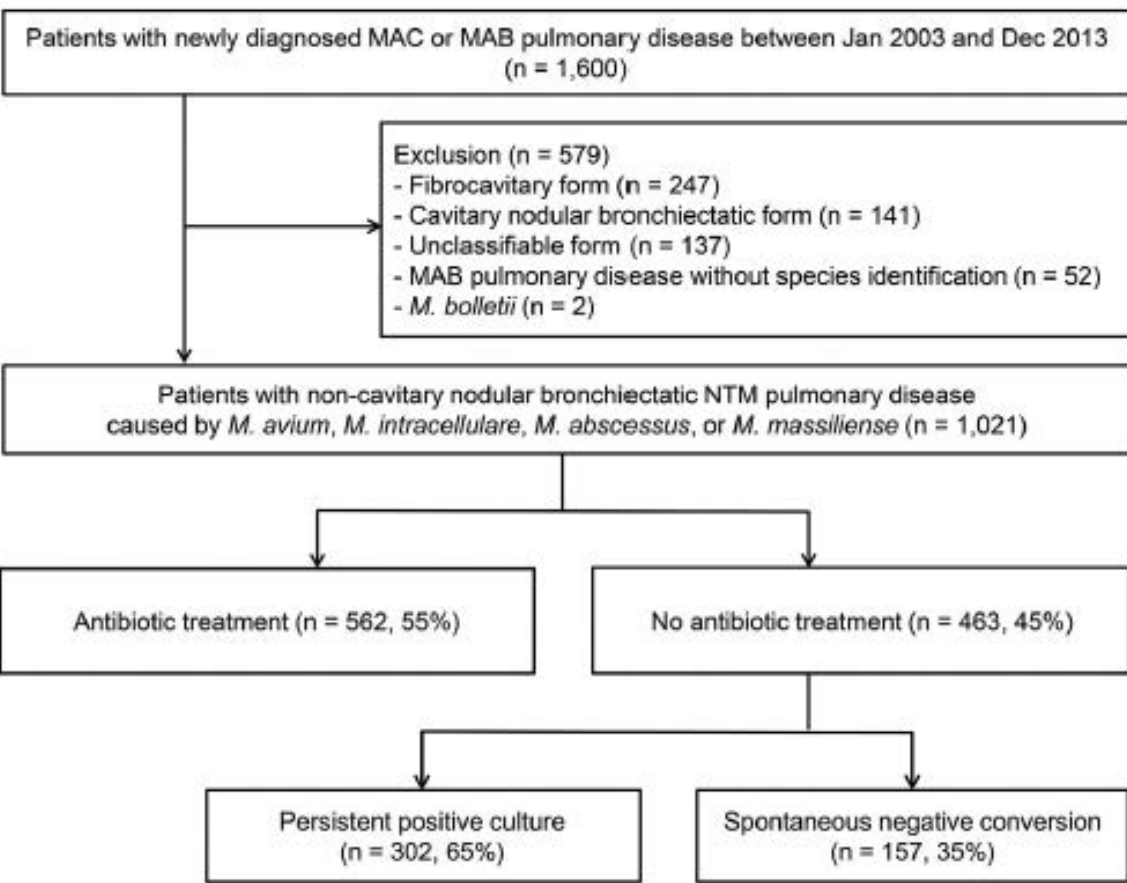


Long-term natural history of non-cavitary nodular bronchiectatic nontuberculous mycobacterial pulmonary disease

Seong Mi Moon^{a,1}, Byung Woo Jhun^{a,1}, Sun-Young Baek^b, Seonwoo Kim^b, Kyeongman Jeon^a, Ryoung-Eun Ko^a, Sun Hye Shin^a, Hyun Lee^a, O Jung Kwon^a, Hee Jae Huh^c, Chang-Seok Ki^c, Nam Yong Lee^c, Myung Jin Chung^d, Kyung Soo Lee^d, Sung Jae Shin^{e,f,g}, Charles L. Daley^{h,i}, Won-Jung Koh^{a,*}

Natural history of *Mycobacterium avium* complex lung disease in untreated patients with stable course

Ji An Hwang^{1,3}, Sunyoung Kim^{2,3}, Kyung-Wook Jo¹ and Tae Sun Shim¹



35% de négativation spontanée

51.6% de négativation spontanée

| | Univariate analysis | | Multivariate analysis | |
|--|---------------------|---------|-----------------------|---------|
| | HR (95% CI) | p-value | HR (95% CI) | p-value |
| Age years | 0.969 [0.945–0.994] | 0.015 | 0.973 [0.948–0.999] | 0.043 |
| Male | 1.087 [0.612–1.929] | 0.776 | 0.885 [0.484–1.621] | 0.693 |
| BMI kg·m ⁻² | 1.108 [1.018–1.205] | 0.017 | 1.101 [1.007–1.205] | 0.035 |
| Nonsmoker | 0.961 [0.542–1.704] | 0.892 | | |
| Presence of comorbidity [#] | 1.309 [0.730–2.345] | 0.366 | | |
| Positive sputum AFB smear | 0.536 [0.259–1.110] | 0.093 | 0.377 [0.156–0.912] | 0.030 |
| Causative organism | | 0.817 | | |
| <i>Mycobacterium avium</i> | 1 | | | |
| <i>Mycobacterium intracellulare</i> | 0.932 [0.514–1.691] | | | |
| Radiological type: nodular bronchiectatic | 1.246 [0.634–2.450] | 0.524 | | |
| Involved lobes | 1.012 [0.770–1.329] | 0.934 | | |
| FVC % pred <80% | 1.165 [0.655–2.072] | 0.604 | | |
| Transient anti-TB medication (≥1 month) [¶] | 2.091 [0.974–4.490] | 0.059 | 3.769 [1.505–9.435] | 0.005 |

Traitement antibiotique ?



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- Mauvaise tolérance du traitement

Kiné- drainage!



Quelle exposition ?



Eau ?



Terre ?



Poussière ?

Quelle exposition ?



Eau ?



Terre ?

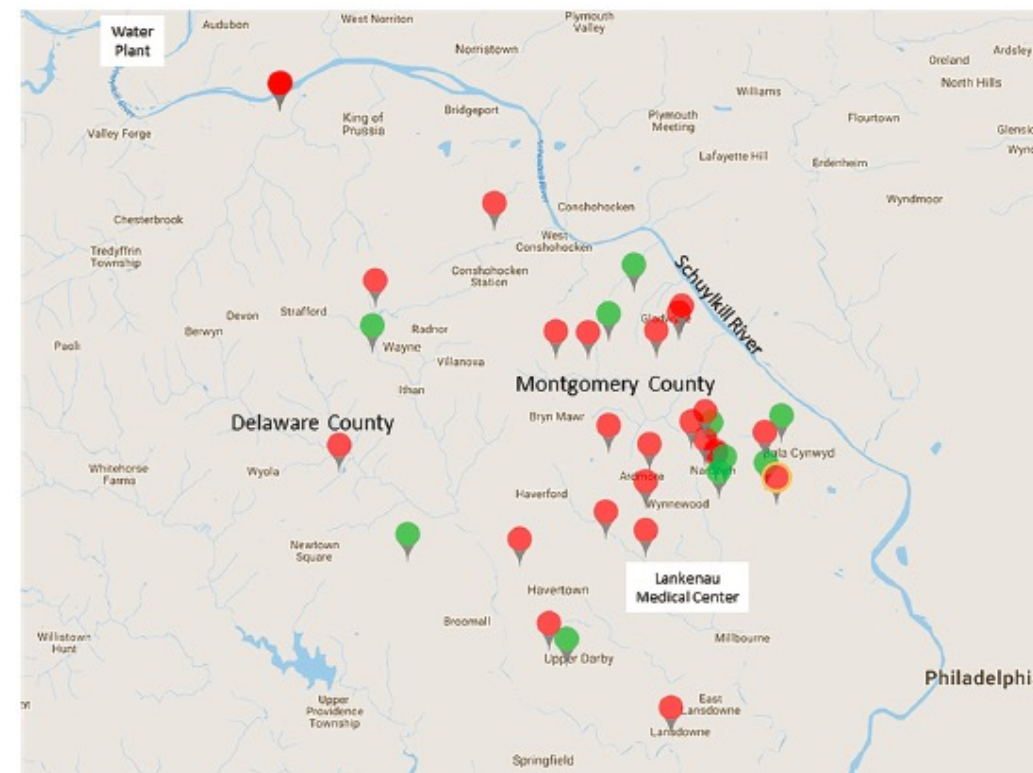


Poussière ?

Mycobacterium avium in Community and Household Water, Suburban Philadelphia, Pennsylvania, USA, 2010–2012

Leah Lande, David C. Alexander, Richard J. Wallace, Jr., Rebecca Kwait,
Elena Iakhiaeva, Myra Williams, Andrew D.S. Cameron, Stephen Olshefsky,
Ronit Devon, Ravikiran Vasireddy, Donald D. Peterson, Joseph O. Falkinham, III

- Patients avec infection à MAC
- Contrôles appariés sur le lieu de vie
- Prélèvements respiratoires
- Prélèvements de l'eau (tuyaux salle de bains, cuisine...)
- Génométypage des isolats de *M. avium* isolates
- WGS

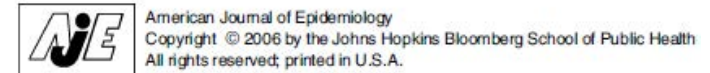


Résultats

- 26 patients
 - 52.4% prélèvements respiratoires génotypiquement identiquement aux prélèvements d'eau des maisons
 - 85.7% d'eau **Maison et quartier = Substantielle source d'infection à MAC?** un prélèvement
 - 33.3% avec génotype différents de ceux de leur maison mais identique à des prélèvements dans le quartier
- **6 génotypes prédominants**
 - Retrouvés à la fois dans les prélèvements mais aussi dans l'entourage des patients

Environmental Risk Factors for Infection with *Mycobacterium avium* Complex

Carrie Reed¹, C. Fordham von Reyn², Sandra Chamblee³, Tedd V. Ellerbrock⁴, Johnny W. Johnson³, Bryan J. Marsh², Linda S. Johnson⁴, Robert J. Trenchel⁵, and C. Robert Horsburgh, Jr.¹



Cohorte par des IDR à MAC

447 participants, 147 positives, 186 négatives and 114 indéterminés

| Soil exposure | | | | | | | |
|-------------------------------|--------|---------|------|-----|----------|-------|--|
| Soil occupation, any | 94/147 | 83/186 | 53.1 | 2.2 | 1.4, 3.4 | <0.01 | |
| None | 53/147 | 103/186 | 34.0 | 1.0 | | | |
| Farm planting, ever‡ | 55/146 | 41/185 | 57.3 | 2.6 | 1.5, 4.4 | <0.01 | |
| Farm truck driver, ever†,‡ | 33/139 | 25/172 | 56.9 | 2.6 | 1.4, 4.8 | <0.01 | |
| Lawn/landscape service, ever‡ | 34/146 | 28/186 | 54.8 | 2.4 | 1.3, 4.3 | <0.01 | |

Pas en faveur d'une exposition via l'eau, mais plutôt avec le sol
 Exposition déterminée par questionnaire

| | | | | | | |
|--------------------------------|---------|---------|------|-----|----------|------|
| Shower/bath >once/day | 55/147 | 55/186 | 48.1 | 1.0 | 0.5, 2.0 | 0.24 |
| Does dishes by hand >once/day | 42/123 | 56/145 | 42.9 | 0.8 | 0.5, 1.4 | 0.45 |
| Drinks bottled water >once/day | 28/136 | 38/163 | 42.4 | 0.9 | 0.5, 1.5 | 0.57 |
| Ever swims, any | 107/147 | 145/186 | 42.5 | 0.8 | 0.5, 1.6 | 0.28 |
| Ever, pool | 73/141 | 109/183 | 40.1 | 0.7 | 0.5, 1.1 | 0.16 |
| Ever, lake | 31/138 | 48/179 | 39.2 | 0.8 | 0.5, 1.6 | 0.37 |
| Ever, ocean | 91/144 | 119/181 | 43.3 | 0.9 | 0.6, 1.4 | 0.63 |

Et la poussière ??

- [Investigation by seroagglutination of strains of the Mycobacterium intracellulare-M. scrofulaceum group from house dusts and sputum in Southeastern Queensland.](#)

1. Reznikov M, Leggo JH, **Dawson DJ**.
Am Rev Respir Dis. **1971** Dec;104(6):951-3. No abstract available.
PMID: 5125600
[Similar articles](#)

- [Serological investigation of strains of Mycobacterium intracellulare \("battey" bacillus\) isolated from house-dusts.](#)

2. Reznikov M, **Dawson DJ**.
Med J Aust. **1971** Mar 27;1(13):682-3. No abstract available.
PMID: 5553815
[Similar articles](#)

- [Potential pathogens among strains of mycobacteria isolated from house-dusts.](#)

3. **Dawson DJ**.
Med J Aust. **1971** Mar 27;1(13):679-81. No abstract available.
PMID: 5553814
[Similar articles](#)

[Kekkaku](#). 1984 Dec;59(12):625-31.

[Mycobacteria from dusts of Japanese houses].

[Article in Japanese]
[Tsukamura M](#), [Mizuno S](#), [Toyama H](#).

Particules de poussières souvent en suspension dans l'air

120 espèces de MNT isolées du sac d'aspirateur

50 espèces of *M. intracellulare* – 44% appartenant à des sérotypes responsables d'infection chez l'hôte



MNT ubiquitaire dans notre environnement

Reducing Human Exposure to *Mycobacterium avium*

Joseph O. Falkinham III¹

¹Department of Biological Sciences, Virginia Tech, Blacksburg, Virginia



Table 3. Measures to reduce *Mycobacterium avium* exposure in households

Drain and refill the hot water heater every 2 wk.
Raise hot water heater temperatures ($\geq 130^{\circ}\text{F}$).
Remove and clean showerheads (full-strength household bleach for 30 min).
Replace showerhead with one that produces streams (holes > 1 mm diameter) and not a fine mist.
Reduce aerosol exposures in bathrooms (fan and window).
Install shower and tap filters that remove bacteria ($\geq 0.45 \mu\text{m}$ pore size).
Replace granular activated carbon filters every 2 wk.
Get rid of any and all humidifiers.
Turn off the humidifier in the HVAC system.
Boiling for 10 min will kill mycobacteria.
Avoid dusts from potting soils (wet potting soil).

- MNT ubiquitaire dans le sol, l'eau et même la poussière !
- Donc poursuite de la douche ...
 - Mais réglage chauffe-eau, au dessus de 60°C 65°C
- **ADN de MNT avec concentration 100 fois supérieure dans le pommeau de douche que dans l'eau...**
 - Risque maximal avec le 1^{er} aérosol
 - Remplacement pommeau de douche
 - Nettoyage du pommeau de douche (lave-vaisselle ?)

Traitement antibiotique ?



- Balance bénéfico-risque
- Possible négativation spontanée
- Persistance de l'exposition
- **Persistance du facteur de risque**
- Mauvaise tolérance du traitement

Kiné- drainage!



Cf Thomas ...



Traitement antibiotique ?



- Balance bénéfico-risque
- Possible négativation spontanée
- Persistance de l'exposition
- Persistance du facteur de risque
- **Mauvaise tolérance du traitement**

Kiné- drainage!



Traitement long, lourd et toxique.... Et efficace ???



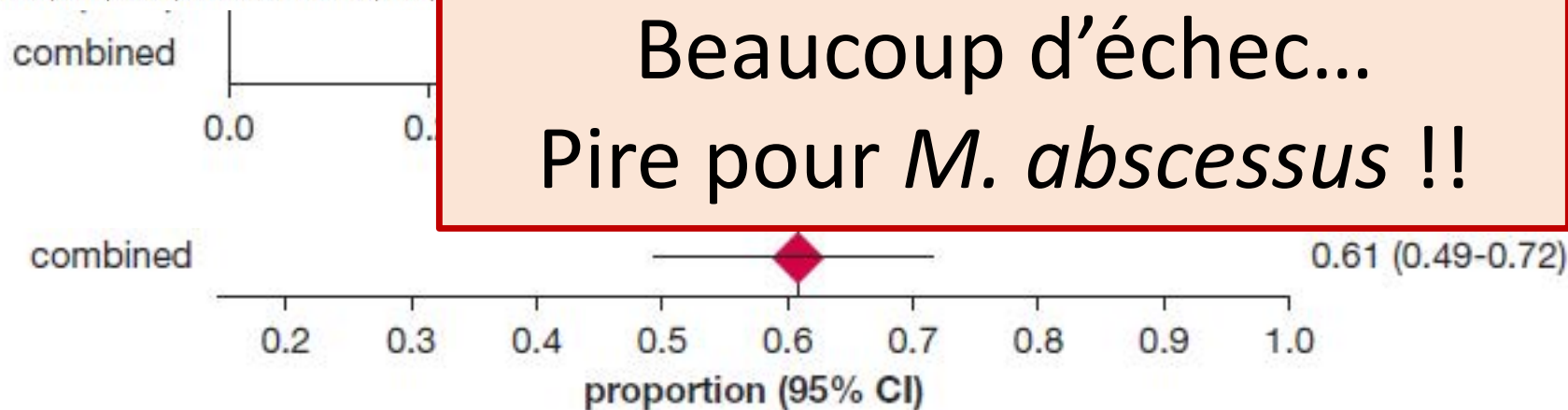
- Quelle efficacité?
- 20%-30%
- 30-40%
- 40-50%
- 50%-60%
- 60-70%
- 70-80%
- Supérieure à 80%

Efficacité?

Microbiologic Outcome of Interventions Against *Mycobacterium avium* Complex Pulmonary Disease

A Systematic Review

Roland Diel, MD, MPH; Albert Nienhaus, MD,



Taux de succès entre 52% et 61%



SOUS
TRAITEMENT

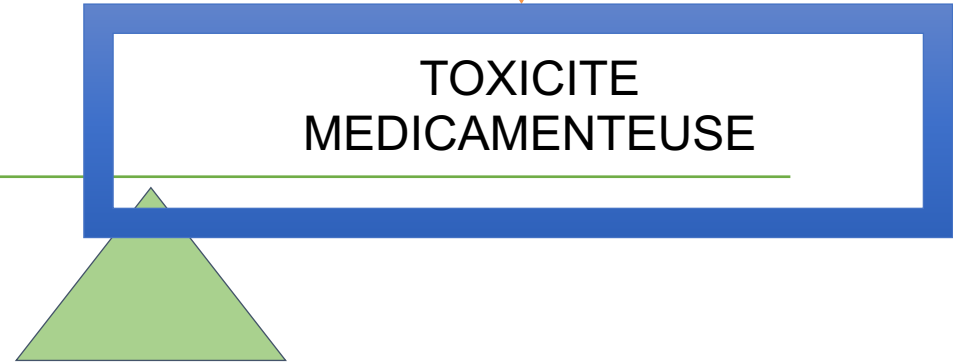


PROGRESSION DE LA
MALADIE

SUR TRAITEMENT

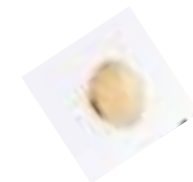


TOXICITE
MEDICAMENTEUSE



Et en dehors des antibiotiques ?...

- Drainage ++++
- Limitation de l'exposition
- Et ?
- Des idées ?



Association of low fat mass with nontuberculous mycobacterial infection in patients with bronchiectasis

Sung Yoon Lim, MD, PhD, Yeon Joo Lee, MD, Jong Sun Park, MD, PhD, Young-Jae Cho, MD, PhD, Ho Il Yoon, MD, PhD, Choon-Taek Lee, MD, PhD, Jae Ho Lee, MD, PhD*

Medicine

Table 2

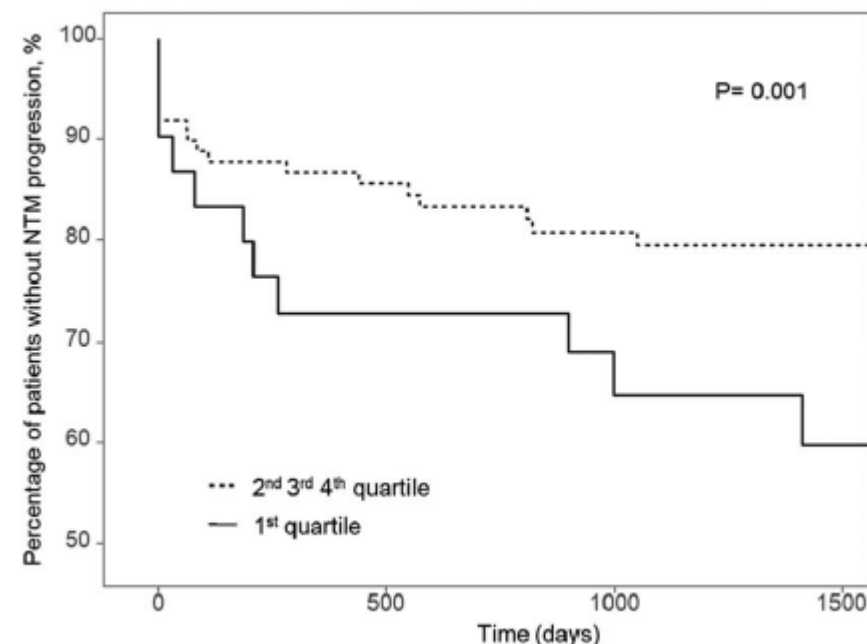
Body composition at study enrollment.

| | Total (N=245) | Non-NTM (N=139) | NTM (N=106) | P-value |
|--|---------------|-----------------|---------------|---------|
| Height (cm) | 159.95 ± 7.99 | 160.23 ± 7.90 | 159.59 ± 8.12 | .530 |
| Weight (kg) | 56.41 ± 9.12 | 58.20 ± 8.84 | 54.16 ± 8.99 | <.001 |
| BM (kg/m ²) | 22.02 ± 2.93 | 22.67 ± 3.04 | 21.20 ± 2.59 | <.001 |
| Total body water (kg) | 30.33 ± 5.80 | 31.04 ± 6.12 | 29.42 ± 5.26 | .026 |
| Protein (kg) | 7.93 ± 1.61 | 8.06 ± 1.73 | 7.78 ± 1.44 | .157 |
| Mineral (kg) | 2.91 ± 1.54 | 3.10 ± 1.80 | 2.67 ± 1.10 | .020 |
| Fat (kg) | 15.32 ± 6.32 | 16.19 ± 6.60 | 14.23 ± 5.79 | .013 |
| Soft lean mass (kg) | 38.55 ± 7.69 | 39.24 ± 8.32 | 37.67 ± 6.74 | .098 |
| Skeletal muscle mass (kg) | 21.94 ± 4.87 | 22.32 ± 5.23 | 21.45 ± 4.36 | .147 |
| Skeletal muscle index (kg/m ²) | 6.87 ± 3.85 | 7.20 ± 5.04 | 6.45 ± 1.01 | .088 |
| Percent body fat (%) | 26.78 ± 9.35 | 27.45 ± 9.90 | 25.93 ± 8.58 | .196 |
| Visceral fat (%) | 68.16 ± 26.21 | 71.87 ± 27.17 | 63.47 ± 24.25 | .003 |
| Fat mass index (kg/m ²) | 6.27 ± 2.59 | 6.79 ± 2.70 | 5.57 ± 2.27 | <.001 |
| Phase angle | 4.70 ± 0.82 | 4.76 ± 0.87 | 4.60 ± 0.73 | .457 |

Risk factors of NTM infection in patients with bronchiectasis.

| | Univariate | | Multivariate | |
|-------------------------------|------------------|---------|------------------|---------|
| | OR (95% CI) | P value | OR (95% CI) | P value |
| Age | 1.00 (0.97-1.02) | .8305 | | |
| Sex | 1.90 (1.09-3.35) | .0250 | 3.86 (1.99-7.78) | .0001 |
| BMI | 0.77 (0.69-0.86) | .0001 | | |
| Protein | 0.86 (0.73-1.02) | .0857 | | |
| Fat | 0.91 (0.87-0.96) | .0001 | | |
| Skeletal muscle mass | 0.95 (0.90-1.00) | .0785 | | |
| Skeletal muscle mass index | 1.00 (0.82-1.20) | .9890 | | |
| Visceral fat | 0.98 (0.97-0.99) | .0003 | | |
| Fat mass index | 0.82 (0.73-0.91) | .0004 | 0.72 (0.63-0.82) | <.0001 |
| Bronchiectasis severity index | 0.90 (0.79-1.01) | .0739 | 0.89 (0.78-1.02) | .1056 |

MNT= pas tous les patients avec DDB!



Nutritional status in female patients with nontuberculous mycobacterial lung disease and its association with disease severity



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BMC Pulmonary Medicine

| | NTM-LD (n = 81) | Control (n = 75) | p Value ^a |
|--------------------------------------|--------------------|---------------------|----------------------|
| Age (years) | 70.8 ± 8.6 | 71.1 ± 2.9 | 0.794 |
| <i>Anthropometric data</i> | | | |
| Height (cm) | 153.7 ± 6.9 | 152.9 ± 5.1 | 0.436 |
| Body weight (kg) | 46.8 ± 7.2 | 53.3 ± 7.8 | < 0.001 |
| Body mass index (kg/m ²) | 19.8 ± 2.5 | 22.8 ± 2.9 | < 0.001 |
| Fat mass (kg) | 12.8 ± 4.8 | 16.5 ± 5.4 | < 0.001 |
| Percentage of body fat (%) | 26.7 ± 7.1 | 30.4 ± 6.1 | 0.001 |
| Skeletal muscle mass (kg) | 17.8 ± 2.5 | 19.6 ± 2.1 | < 0.001 |
| <i>Nutritional data</i> | | | |
| Energy (kcal/day) | 1673 ± 340 | 1926 ± 375 | < 0.001 |
| Protein (g/day) | 64.2 ± 18.0 | 79.4 ± 18.9 | < 0.001 |
| Fat (g/day) | 51.2 ± 17.4 | 59.9 ± 17.3 | 0.002 |
| Carbohydrate (g/day) | 229.9 ± 55.7 | 260.0 ± 60.3 | 0.002 |

| Variables | All (n = 81) | Disease severity | | p Value ^a |
|--|-----------------|------------------|--------------------|----------------------|
| | | Mild (n = 40) | Severe (n = 41) | |
| <i>Blood biochemistry</i> | | | | |
| Albumin (g/dL) | 4.4 ± 0.3 | 4.4 ± 0.3 | 4.3 ± 0.3 | 0.029 |
| Transthyretin (mg/dL) ^b | 20.0 ± 4.5 | 21.5 ± 3.5 | 18.4 ± 4.9 | 0.002 |
| Transferrin (mg/dL) | 224 ± 37 | 230 ± 34 | 218 ± 40 | 0.157 |
| Retinol-binding protein (mg/dL) ^b | 2.5 ± 0.6 | 2.7 ± 0.5 | 2.3 ± 0.6 | 0.011 |
| Total cholesterol (mg/dL) | 225 ± 36 | 226 ± 33 | 225 ± 38 | 0.886 |
| Hemoglobin (g/dL) | 13.1 ± 1.1 | 13.5 ± 1.0 | 12.7 ± 1.0 | 0.001 |
| Lymphocyte count (× 10 ² /μL) | 13.4 ± 4.0 | 13.8 ± 3.4 | 13.1 ± 4.5 | 0.415 |

| Variable s | Univariate | | | Multivariate | | |
|--------------------------------------|------------|-------------|---------|--------------|-------------|---------|
| | OR | 95% CI | p Value | Model 1 | | |
| | OR | 95% CI | p Value | OR | 95% CI | p Value |
| Age (years) | 1.055 | 0.998–1.114 | 0.057 | – | – | – |
| Body mass index (kg/m ²) | 0.844 | 0.702–1.016 | 0.073 | 0.848 | 0.702–1.024 | 0.086 |
| Energy intake (kcal/day) | 1.000 | 0.999–1.001 | 0.961 | 1.000 | 0.999–1.001 | 0.851 |
| Albumin (g/dL) | 0.154 | 0.027–0.868 | 0.034 | 0.209 | 0.035–1.265 | 0.088 |
| Transthyretin (mg/dL) | 0.843 | 0.754–0.943 | 0.003 | 0.858 | 0.765–0.962 | 0.008 |
| Retinol-binding protein (mg/dL) | 0.364 | 0.150–0.880 | 0.025 | 0.368 | 0.152–0.893 | 0.027 |
| Hemoglobin (g/dL) | 0.413 | 0.244–0.700 | 0.001 | 0.426 | 0.249–0.726 | 0.002 |

Attention à la dénutrition !

Traitement ou Prévention ?

- Prise en charge nutritionnelle = curatif ET préventif
- Limitation exposition aux mycobactéries ...
- ET attention aux traitements des patients !!!

FDR d'infections à MNT

Chronic respiratory disease, inhaled corticosteroids and risk of non-tuberculous mycobacteriosis

Claire Andréjak,^{1,2,3,4} Rikke Nielsen,¹ Vibeke Ø Thomsen,⁵ Pierre Duhaut,^{3,6} Henrik Toft Sørensen,¹ Reimar Wernich Thomsen¹

| Exposure | Cases (n = 332), n (%) | Population controls (n = 3320), n (%) | Unadjusted OR (95% CI) | Adjusted OR* (95% CI) |
|--|------------------------|---------------------------------------|------------------------|-----------------------|
| Any chronic respiratory disease | | | | |
| Absent | 165 (49.7) | 3115 (93.8) | 1.0 (ref.) | 1.0 (ref.) |
| Present | 167 (50.3) | 205 (6.2) | 18.0 (13.4 to 24.2) | 16.5 (12.2 to 22.2) |
| COPD | | | | |
| Absent | 192 (57.8) | 3161 (95.2) | 1.0 (ref.) | 1.0 (ref.) |
| Present | 140 (42.2) | 159 (4.8) | 15.7 (11.4 to 21.5) | 15.7 (11.4 to 21.5) |
| Present, first COPD diagnosis | | | | |
| Within 2 years | 41 (29.3) | 15 (0.5) | 22.5 (13.1 to 38.5) | 22.5 (13.1 to 38.5) |
| 2–5 years earlier | 39 (27.9) | 15 (0.5) | 16.2 (9.8 to 26.7) | 16.2 (9.8 to 26.7) |
| >5 years earlier | 60 (43.0) | 29 (0.9) | 12.9 (8.58 to 19.4) | 12.9 (8.58 to 19.4) |
| Present, with hospitalised COPD exacerbation | | | | |
| 0 within last year | 66 (47.1) | 134 (4.0) | 7.0 (5.1 to 11.1) | 6.3 (4.2 to 9.4) |
| 1 within last year | 28 (20.0) | 12 (0.4) | 43.9 (21.9 to 87.7) | 44.0 (21.8 to 88.9) |
| 2 within last year | 12 (8.6) | 6 (0.2) | 18.3 (5.9 to 57.0) | 17.5 (5.6 to 54.7) |
| ≥3 within last year | 34 (24.2) | 7 (0.2) | 65.2 (29.1 to 146.0) | 64.5 (28.5 to 146.2) |
| Asthma | | | | |
| Absent | 282 (84.9) | 3249 (97.9) | 1.0 (ref.) | 1.0 (ref.) |
| Present | 50 (15.1) | 71 (2.1) | 8.3 (5.6 to 12.3) | 7.8 (5.2 to 11.6) |
| Pneumoconiosis | | | | |
| Absent | 329 (99.1) | 3318 (99.9) | 1.0 (ref.) | 1.0 (ref.) |
| Present | 3 (0.9) | 3 (0.1) | 10.0 (2.0 to 49.6) | 9.8 (1.9 to 50.5) |
| Bronchiectasis | | | | |
| Absent | 314 (94.6) | 3318 (99.9) | 1.0 (ref.) | 1.0 (ref.) |
| Present | 18 (5.4) | 2 (0.1) | | |
| Previous tuberculosis | | | | |
| Absent | 277 (83.4) | | | |
| Present | 55 (16.6) | | | |
| Chronic respiratory failure | | | | |
| Absent | 317 (95.5) | 3316 (99.9) | 1.0 (ref.) | 1.0 (ref.) |
| Present | 15 (4.5) | 4 (0.1) | 37.5 (12.4 to 112.9) | 28.1 (9.2 to 85.8) |

BPCO, DDB, séquelles tuberculeuses
= Facteurs non modifiables!

Et le traitement de ces maladies?

Chronic respiratory disease, inhaled corticosteroids and risk of non-tuberculous mycobacteriosis

Claire Andréjak,^{1,2,3,4} Rikke Nielsen,¹ Vibeke Ø Thomsen,⁵ Pierre Duhaut,^{3,6} Henrik Toft Sørensen,¹ Reimar Wernich Thomsen¹

Ever use of ICS

Current ICS use (within 6 months)

41/47 (87.2)

37/51 (72.5)

28.5 (15.4 to 52.9)

24.3 (11.9 to 49.7)

The risk of mycobacterial infections associated with inhaled corticosteroid use

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CSI = FDR d'infection à MNT

Current ICS use

1905 (64.2)

5029 (42.4)

2.87 (2.59–3.19)

<0.001

1.86 (1.60–2.15)

<0.001

Inhaled Corticosteroids Increase Risk of Nontuberculous Mycobacterial Lung Disease: A Nested Case-Control Study and Meta-analysis

Chin-Chung Shu,^{1,2,a} Yu-Feng Wei,^{3,4,a} Kuang-Hung Chen,¹ Shulin Chuang,⁵ Ya-Hui Wang,⁶ Cheng-Yi Wang,⁷ and Hao-Chien Wang^{1,2}

The Association of Long-term Macrolide Therapy and Nontuberculous Mycobacterial Culture Positivity in Patients With Bronchiectasis



- United States Bronchiectasis and NTM Research Registry (BRR): 3472 patients
- Exclusion de 2259 patients avec au moins un prélèvement positif à MNT
- Exclusion 629 patients sans suivi
- Inclusion de 410 patients
 - Macrolide : 91 patients
 - Pas de macrolides : 319 patients

Rôle des macrolides pour prévenir les infections à MNT ?
 Mais les macrolides doivent être prescrit APRES plusieurs prélèvements négatifs pour MNT
 Monothérapie de macrolides = haut risque de sélection de souches résistantes aux macrolides

Visite de suivi à 1 an
 MNT:

- Macrolide = 3.3%
- Pas de macrolides = 13.8%
- OR 0.21 p=0.005

| | | |
|--|-----------------------------|------------------------------|
| Patients with any positive mycobacterial culture | 3 ^{b,c} (3.3%) | 44 (13.8%) |
| Organisms cultured ^a | | |
| <i>Mycobacterium avium</i> complex | 2 | 38 |
| <i>Mycobacterium chelonae/abscessus</i> | 1 | 2 |
| <i>Mycobacterium fortuitum</i> | 0 | 2 |
| <i>Mycobacterium terrae</i> group | 0 | 1 |
| Nonspeciated | 0 | 1 |
| Patients with more than one positive culture | 1 (1.1%) | 13 (4.1%) ^d |
| Two | 1 (<i>M avium</i> complex) | 11 (<i>M avium</i> complex) |
| Three or more | 0 | 2 (<i>M avium</i> complex) |
| Patients with only negative mycobacterial cultures | 64 (70.3%) | 188 (58.9%) |
| Patients with no mycobacterial culture results | 24 (26.4%) | 87 (27.3%) |

Take home messages

- Affirmer le diagnostic
- Traiter les autres co-pathogènes
- Drainage bronchique – kinésithérapie ++++
- Discuter les antibiotiques
 - Balance bénéfique/risque
 - Problème de tolérance
 - Efficacité imparfaite
 - Risque de récurrence +++
- Améliorer le statut nutritionnel
- Limiter l'exposition
- Et prévenir l'infection et les rechutes ! Attention prescription CSI/macrolides !

Mais le fond du problème, moi je vous le dis, c'est que les mycobactéries, c'est des vicieuses !

