**O039**

**2-hour Oral Session**

## Should brucellosis be a part of differential diagnosis when tuberculous meningitis is predicted with Thwaites or Lancet scoring systems?

H. Erdem[1], S. Senbayrak[2], S. Gencer[3], L. Gorenek[4], M. Karahocagil[5], G. Sengoz[6], H. Karsen[7], S. Kaya[8], R. Civljak[9], S. Inal[10], A. Pekok[11], M. Celen[12], S. Deniz[2], M. Ulug[13], T. Demirdal[14], M. Namiduru[15], R. Tekin[12], T. Guven[16], S. Bolukcu[17], E. Parlak[18]

[1]*GATA Haydarpasa, Istanbul, Turkey*

[2]*Haydarpasa Numune Training and Research Hospital- Department of Infectious Diseases and Clinical Microbiology, Istanbul, Turkey*

[3]*Lutfi Kirdar Training and Research Hospital- Department of Infectious Diseases and Clinical Microbiology, Istanbul, Turkey*

[4]*GATA Haydarpasa Training Hospital- Department of Infectious Diseases and Clinical Microbiology, Istanbul, Turkey*

[5]*Yuzuncuyil University School of Medicine- Department of Infectious Diseases and Clinical Microbiology, Van, Turkey*

[6]*Haseki Training and Research Hospital- Department of Infectious Diseases and Clinical Microbiology, Istanbul, Turkey*

[7]*Harran University- School of Medicine, Department of Infectious Diseases and Clinical Microbiology, Sanliurfa, Turkey*

[8]*Karadeniz Technical University School of Medicine- Department of Infectious Diseases and Clinical Microbiology, Trabzon, Turkey*

[9]*Dr. Fran Mihaljevic University Hospital for Infectious Diseases- Department of Infectious Diseases, University of Zagreb School of Medicine, Zagreb, Croatia*

[10]*Cukurova University School of Medicine- Department of Infectious Diseases and Clinical Microbiology, Adana, Turkey*

[11]*Private Erzurum Sifa Hospital- Department of Infectious Diseases and Clinical Microbiology, Erzurum, Turkey*

[12]*Dicle University School of Medicine- Department of Infectious Diseases and Clinical Microbiology, Diyarbakir, Turkey*

[13]*Private Umit Hospital- Department of Infectious Diseases and Clinical Microbiology, Eskisehir, Turkey*

[14]*Katip Celebi University School of Medicine- Department of Infectious Diseases and Clinical Microbiology, Izmir, Turkey*

[15]*Gaziantep University School of Medicine- Department of Infectious Diseases and Clinical Microbiology, Gaziantep, Turkey*

[16]*Ankara Atatürk Training & Research Hospital- Department of Infectious Diseases and Clinical Microbiology, Ankara, Turkey*

[17]*Bezmi Alem Vakif University- School of Medicine, Department of Infectious Diseases and Clinical Microbiology, Istanbul, Turkey*

[18]*Ataturk University School of Medicine- Department of Infectious Diseases and Clinical Microbiology, Erzurum, Turkey*

**BACKGROUND:** Brucellar meningoencephalitis is one of the leading causes of chronic central nervous system (CNS) infections together with tuberculous meningitis (TBM). Since culture is very slow and non-culture diagnosis lacks sensitivity, Thwaites and Lancet scoring systems have been used in the rapid diagnosis of TBM. According to our clinical experience these two methods may misdiagnose brucellar CNS disease as TBM. Thus, we designed this multicenter study to test this hypothesis.

**METHODS:** 294 patients with brucellar meningoencephalitis treated in 35 tertiary hospitals were included. Neurobrucellosis inclusion criteria were all of the following: (i) the presence of clinical symptoms consistent with either meningitis or meningoencephalitis (ii) the presence of typical cerebrospinal fluid (CSF) findings consistent with meningitis, (iii) the presence of positive culture or serological tests for brucellosis in the blood or in the CSF, (iv) the absence of an alternative neurological diagnosis. The control group comprised 190 patients with TBM. Inclusion criteria were clinical evidence of meningitis and microbiological confirmation of TBM. The microbiological confirmation included culture, PCR analysis and Ehrlich-Ziehl-Neelsen staining from the CSF.
Both patient groups were compared by using *Mann-Whitney U test*. A score of 12 was assigned as “probable”, 6-11 as “possible”, and less than 5 were noted as negative for tuberculous meningitis. According to the categories of both scores two patient groups were compared with *chi-square* tests. In testing the correlation of both systems “*Pearson test”* was used. The value of $p<0.05$ was accepted as significant.

**RESULTS:** The mean and median values of Thwaites and Lancet scoring systems for both groups are presented in table 1. The distribution of the scores in two groups were significantly different ($p=0.001$ and $p<0.001$ respectively). Added to that, there was a significant difference between the diagnostic categories for both prediction systems (Table).

According to Lancet scoring system, 88.1% of neurobrucellosis cases were classified as possible and 8.8% were categorized as probable while 51.6% of TBM cases were reported as possible and 45.3% were as probable. On the other hand, 99.3% of neurobrucellosis patients and 95.8% of microbiologically confirmed TBM patients met the criteria for TBM.

**CONCLUSION:** Brucellar meningoencephalitis can be easily confused with TBM when Thwaites and Lancet prediction systems are used. Thus, brucellosis should be considered in the differential diagnosis of TBM in endemic countries.

**Table. Mean, median values and categorical classification of Thwaites and Lancet scores**

| | Neurobrucellosis | TBM | p |
|---|---|---|---|

| | n=294 | n=190 | |
|---|---|---|---|
| Thwaites scoring system | | | |
| Median score | -3 | -3 | **0.001*** |
| Mean±SD score | -3.11±2.30 | -2.09±3.11 | |
| Diagnostic classification | | | **0.017#** |
| TBM | 292 (%99.3) | 182 (%95.8) | |
| Bacterial meningitis | 2 (0.7%) | 8 (4.2%) | |
| Lancet scoring system | | | |
| Median score | 10 | 11 | **<0.001*** |
| Mean±SD score | 9.43±1.71 | 11.45±3.01 | |
| Diagnostic categories | | | **<0.001#** |
| Probable | 26 (8.8%) | 86 (45.3%) | |
| Possible | 259 (88.1%) | 98 (51.6%) | |
| Negative | 9 (3.1%) | 6 (3.2%) | |

**Mann-Whitney U test* *#Chi-square test* TBM: Tuberculous meningitis