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Seroprevalence and Risk of Seroconversion Against JC Virus Among Multiple Sclerosis Patients in Eastern Mediterranean Region: A Multi-National Study

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Background: There is a paucity of published data on JC virus seroprevalence and risk of conversion in the Middle East.

Objective: To estimate JCV seroprevalence and annual risk of seroconversion among MS patients in the Middle East.

Design & Method: This was a multi-center study conducted among MS patients in four regional counties by implementing; i) a cross-sectional design to assess JCV seroprevalence and evaluate factors associated with JCV sero-status and ii) a longitudinal design to assess the risk of seroconversion. JCV seroprevalence was computed based on the results of first serological test. Annual risk of seroconversion was computed among patients who were JCV seronegative on first test but seroconverted against JCV in subsequent tests. The relationship of demographic and clinical variables with JCV seropositivity was evaluated using multivariable logistic regression analyses.

Result: Of 581 MS patients in the study sample, 64.9% patients were females. JCV seroprevalence was 51.3%. Male gender (aOR = 2.15; p = 0.002), age at onset (aOR = 1.05; p = 0.001) and disease duration of 2 or more years (aOR = 12.03; p = 0.007) were significantly associated with JCV seropositivity. Among patients (n=125) who were tested at least twice during one year of follow-up, risk of seroconversion was 17.6% (95% CI: 11.4% – 25.4%). There was statistically significant difference in mean MS duration between JCV seroconverted and seronegative patients (p = 0.021). 63.6% of the sero-converters had titers < 1 while 5.8% of seronegative patients had transient seropositivity with titers < 0.6.

Conclusion: JCV seroprevalence among MS patients in the Middle East is comparable to international figures. Male gender, higher age at onset and longer disease duration were significantly associated with JCV seropositivity. The annual risk of seroconversion against JCV is higher than what had been published in the literature.