PASSIVE TRANSFER PROTECTION AGAINST JUNIN VIRUS IN CYCLOPHOSPHAMIDE-SUPPRESSED MICE

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Newborn mice infected intracerebrally (i.c.) with Junin virus (JV) are highly susceptible, whereas adult mice have proved resistant (*1*). Forty five-day-old Balb/c mice were infected i.c. with 10^3 LD_{50} of JV and treated by 4 intraperitoneal (i.p.) inoculations of cyclophosphamide (CY) (50 mg/kg body weight) developed a lethal disease similar to that observed in newborn mice (*2*). Infected mice failed to show virus in brain, whereas serum neutralizing antibody levels rose steeply from day 8 (1 : 80) until day 25 postinfection (p.i.) (1 : 320). CY-treated animals exhibited sustained virus titres in the brain (day 8: $10^{3.7}$ PFU/ml; day 25: $10^{2.8}$ PFU/ml) but antibodies remained undetectable throughout.

The transfer of immune spleen cells conferred significant protection ($0.02 > p > 0.01$) which was strongly inhibited by antitheta serum and complement (Table 1). Besides, the transferred cells were able to lower markedly virus multiplication in the brain at day 14 p.i., as compared to controls. Significant protection ($p < 0.005$) was achieved by both immune serum and IgG but unlike cell transfers, the virus titres in brain proved independent of mortality and despite protection, remained unchanged in comparison with controls (Table 1).

Recipient	Passive transfer	Days p.i.[a]			Mortality[b]
		8	11	14	(%)
	Serum*	3.5×10^3	4.4×10^4	4.0×10^4	58.2 (55)
A	None	9.0×10^3	5.0×10^4	6.0×10^4	87.5 (40)
	γ-globulin fraction**	1.4×10^3	6.5×10^2	5.0×10^2	30.4 (46)
	None	4.5×10^3	1.0×10^3	2.0×10^3	92.5 (40)
	Spleen cells***	1.5×10^4	4.0×10^3	<5	74.2 (66)
B	Anti-theta serum	1.0×10^4	4.5×10^3	3.0×10^3	90.0 (30)
	None	2.0×10^3	7.0×10^3	1.5×10^3	93.2 (44)

* Neutralizing antibody titre 160; ** neutralizing titre 1280;

*** Donor mice receiving 5 weekly i.p. injections of 5×10^3 LD_{50} of JV; spleen removed 9 days after the last inoculation.

A = CY-treated infected adult mice receiving 0.7 ml antibodies 5 times from —1 to +9 days.

B = Infected adult mice CY-treated on days —1, +1, +4, +6; spleen cell transfer: 8×10^7 viable cells by i.p. route at day 7.

([a]) Virus titre in the brain (PFU/ml); ([b]) Number of mice tested in parentheses.

We believe that the partial protection and virus clearance observed in mice receiving spleen cells, should be ascribed to the early action of the T subset generated after JV infection of adult mice (*3*), (*4*). A comparatively greater role of specific antibodies in the recovery from JF infection was demonstrated by the efficacy of passively transferred antibody to decrease the mortality of immunosuppressed mice. In the latter, however, virus content in and clearance from the brain failed to correlate with the mortality rate even that the humoral immune response was essential for recovery.

References

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