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5. Shill M, Baynes RD, Miller SD. Fatal rabies encephalitis despite appropriate prophylaxis—A case report. *New Engl J Med* 1987, 316: 1257-1258.
6. Wiktor TJ, Koprowski H. Antigenic variants of rabies vaccine. *J Exp Med* 1980, 152: 99-112.
7. Schneider Lothar G. Spread of virus within the central nervous system. *In: The Natural History of Rabies, Vol I.* Ed Baer GM. New York, Academic Press, 1975, pp 199-216.
8. Mertz GJ, Nelson KE, Vithayasai V. *et al.* Antibody responses to human diploid cell vaccine for rabies, with and without human rabies immune globulin. *J Infect Dis* 1982, 145: 720-727.
9. Alexander ER, Human diploid cell rabies vaccine: More protection for less risk? *JAMA* 1982, 247: 1138-1142.

Successful Treatment of Hepatic Hemangiomas with Corticosteroids

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Corticosteroids are successfully employed to treat a patient with disseminated hemangiomatosis (cutaneous with large hepatic hemangiomas) which produce high output congestive heart failure. Children

with this malformation may present with congestive cardiac failure and may have very high mortality if untreated. The present report presents a patient with this disease in whom therapy with corticosteroids was successfully employed.

Case Report

A 3-month-old female child was brought with the complaints of cough, fever, breathlessness, poor feeding for 7 days. There was a history of multiple hemangiomas present all over the body since birth.

On examination her pulse was 180/minute and respiratory rate was 62/minute with marked distress. The peripheral pulses were bounding. The cardiac examination showed Grade III systolic murmur at left upper sternal border. The liver was palpable 3 cm below costal margin and the upper border was present in the 6th intercostal space. There was no icterus. Investigations revealed normal liver function tests, X-ray showed a diffuse enlarged heart with increased pulmonary vascularity. The electrocardiogram was normal. Ultrasonography of abdomen revealed echolucent vascular deformities in posterior part of the liver. Close liver biopsy was not performed because of high vascularity of the tumor(1).

Computerized tomography scan (CT Scan) of abdomen showed entire right lobe

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of liver with multiple well defined round hypodense areas which showed enhancement after contrast injection. They were suggestive of multiple hepatic hemangiomas. Fundus examination and ultrasonography through anterior fontanelle were normal. The platelet count was normal. The child was treated with digoxin, lasix and prednisolone 2 mg/kg/day in divided doses. Within a week, the cutaneous hemangiomas decreased in size and cardiac failure improved. Two weeks later, cardiomegaly decreased and repeat computerized tomography scan done 6 weeks later showed total regression of hepatic hemangiomas. Administration of prednisolone daily was switched to alternate day 6 weeks after institution of therapy. Administration of steroids was tapered and then discontinued by the end of 4th month after institution of the therapy.

Discussion

Corticosteroids have been reported to produce a decrease in the size of cutaneous hemangiomas, although the exact mechanism is not known(2-4).

The natural history of most cutaneous capillary hemangiomas is one of spontaneous regression. Similar regression may occur in cavernous hemangiomas but the high output cardiac failure created by the arteriovenous shunt in most cases of hepatic hemangiomas has been severe enough to produce death though spontaneous regression has been reported(5).

Hepatic scans appear to be particularly useful to record the course of hepatic hemangiomas. Larcher and Mowat have suggested the following scheme of management(6). A patient with cutaneous and visceral hemangiomas should be watched

carefully for development of complications. Congestive cardiac failure should be managed with digoxin and lasix, primarily. Hepatic artery ligation should be considered for cardiac failure in very young infants below six weeks. In older patients, hepatic artery ligation should be considered if treatment with corticosteroids 2 mg/kg/day for two weeks fails to show improvement.

In conclusion, corticosteroid therapy of symptomatic hepatic hemangiomas should be tried as first line of defence in the treatment of this condition which otherwise usually leads to death.

REFERENCES

1. Thapa BR, Yachha S, Narasimha Rao KL, Gupta HL, Kataria S, Mehta S. Multiple nodular infantile hemangioendothelioma of liver. *Indian Pediatr* 1988, 25: 199-203.
2. Esterly NB. Disseminated hemangiomatosis. *In: Nelson Textbook of Pediatrics*, 13th edn. Eds Nelson WE, Behrman RE, Vaughan VC. Philadelphia, WB Saunders Company, 1987, p 1391.
3. Delormier A. Hepatic artery ligation for hepatic hemangiomatosis. *New Eng J Med* 1967, 277: 333-337.
4. Fost NC, Esterly NB. Successful treatment of juvenile hemangiomas with prednisone. *J Pediatr* 1968, 72: 315-357.
5. Goldberg SJ, Fonkal Srud E. Successful treatment of hepatic hemangioma with corticosteroids. *JAMA* 1969, 203: 13.
6. Larcher VF, Howard EF, Mowat AP. Hepatic hemangiomata—Diagnosis and management. *Arch Dis Child* 1981, 56: 7-14.