

Powerlifter's Purpura: A Valsalva-Associated Phenomenon

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The causes of purpura can be classified into intravascular, vascular, and extravascular mechanisms. We describe a case of cervicofacial purpura in a powerlifter attributed to the accompanying Valsalva-associated increased arterial pressure. Powerlifting should be added to the list of activities that may cause purpura.

Weight training is an increasingly popular form of exercise. Powerlifting challenges one's maximum effort in weight training events and is a legitimate competitive sport internationally. Studies have shown that repetitive weight training, which incorporates a Valsalva maneuver, can increase arterial pressure to values as high as 450/380 mm Hg.¹

Purpura of the head and neck can be induced by coughing, vomiting, parturition, thoracic compression, bungee jumping, spirometry use, and epileptic seizures.²⁻⁷ We report a case of cervicofacial purpura in a competitive powerlifter induced by the Valsalva-associated increased arterial pressure.

Case Report

A healthy 21-year-old collegiate male powerlifter requested evaluation for the sudden onset of an "unsightly" asymptomatic neck rash. The eruption was noted during weight training drills the day prior and was not present before the practice. He denied prior history of a similar rash and denied any systemic symptoms. Further questioning disclosed that he had missed more than one-week's practice preceding the day of the rash's occurrence and that he was engaged in a particularly strenuous burst of exertion when the rash began. The specific exercise he practiced involved a squatting to stand-

ing maneuver while lifting several hundred pounds hoisted upon his shoulders.

Physical examination revealed extensive non-palpable purpura of the anterior and lateral neck (Figure). Similar purpura also were noted on the upper eyelids.

The patient was reassured that the skin changes were a temporary phenomenon due to his powerlifting activity and indeed the changes subsided within several days. The patient denied any known documentation of blood vessel abnormalities of the brain. He was advised that there was a possibility that the eruption could recur with his powerlifting activity.

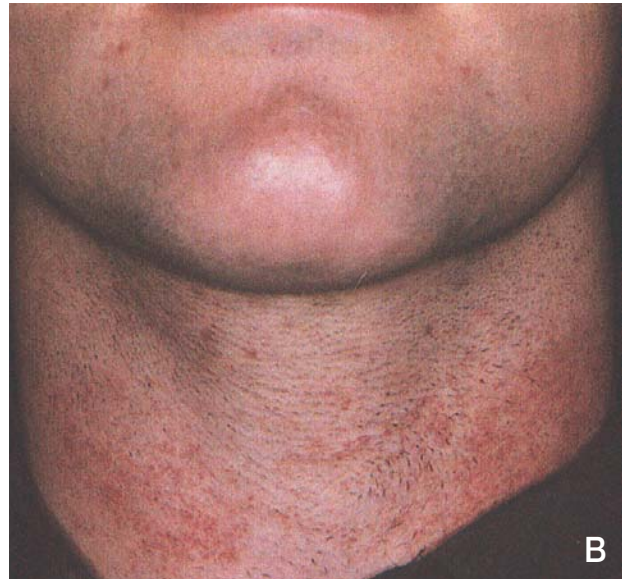
Comment

Purpura can occur through intravascular causes (eg, coagulopathies, thrombocytopenias, thrombopathies, thrombocythemias), vascular causes (eg, inflammatory, cryopathies, infections, emboli, vasculature defects), and extravascular causes (eg, endocrinopathies, immunologic, toxins, mechanical).⁸ The present case involving a powerlifter would best be designated as an extravascular purpura. Extravascular purpura associated with weight training, in addition to coughing, vomiting, parturition, thoracic compression, bungee jumping, spirometry use, and epileptic seizures, presumably are due to a capillary hypertension mechanism caused by the elevation of intrathoracic pressure. The increased pressure ruptures dermal capillaries with resultant purpura formation. Seizure-associated cervicofacial purpura, however, is more complex. In addition to a vascular pressure mechanism, ictal corticolimbic stimulation of the autonomic nervous innervation of facial vasomotor structures and trigeminal-mediated local release of vasoactive substances may be causative.⁷

Because the increases in Valsalva-induced arterial pressure can reach up to 450/380 mm Hg in weight training of the upper and lower extremities,¹ it is not surprising that extravascular purpura can be seen with this activity. Ocular hemorrhage in young adult weightlifters also have been described.⁹ More

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Purpura on the anterior neck (A and B).

ominously, 3 cases of subarachnoid hemorrhage have been described in weight trainers, leading those authors to propose that the increase in arterial transmural pressure might initiate the rupture of a previously innocuous intracranial aneurysm.¹⁰

Recognition of extravascular purpuras could be potentially important in medicolegal investigations. Falsely raised concerns of spousal abuse occurred in the case of a woman with postictal hemifacial purpura.⁷ Extravascular facial purpura from Valsalva effect is also in the differential diagnosis of child abuse.¹¹ Furthermore, there is a theoretical possibility that the detection of neck purpura in a coroner's examination might erroneously suggest homicide when one of the above-mentioned extravascular purpuras could have been causative in the hours or days antemortem.

Valsalva-associated extravascular purpura in individuals engaged in strenuous weight training or powerlifting is easily diagnosed with appropriate history and physical examination. Platelet count and clotting tests are not necessary. These athletes may not make the temporal association with the triggering activity, so healthcare providers should be familiar with this phenomenon to reassure the patient. The eruption gradually fades, and further evaluation is not necessary unless the patient has been previously diagnosed with an intracranial aneurysm. Such individuals should be referred to a neurosurgeon to discuss the possible link between this form of exercise and aneurysmal subarachnoid hemorrhage.

REFERENCES

1. Dickerman RD, McConathy WJ, Smith GH, et al. Middle cerebral artery blood flow velocity in elite power athletes during maximal weight-lifting. *Neurol Res.* 2000;22:337-340.
2. Alcalay J, Ingber A, Sandbank M. Mask phenomenon: postemesis facial purpura. *Cutis.* 1986;38:28.
3. Wilkin JK. Benign parturient purpura [letter]. *JAMA.* 1978;239:930.
4. Vidal P, Angenard F, Jeleff C, et al. Thoraco-cervicofacial purpura caused by thoracic compression: a new Perthes syndrome [in French]? *Ann Fr Anesth Reanim.* 1994;13:130-132.
5. Amgwerd MG. Acute venous stasis in the area of the head after bungee-jumping: a report of 2 cases [in German]. *Unfallchirurg.* 1995;98:447-448.
6. Lupton, GP. Pneumetry-induced purpura [letter]. *Arch Dermatol.* 1981;117:603.
7. Reis JJ, Kaplan PW. Postictal hemifacial purpura. *Seizure.* 1998;7:337-339.
8. Faria DY, Fivenson DP, Green H. Peripheral vascular diseases. In: Moschella SL, Hurley HJ, eds. *Dermatology.* Vol 1. Philadelphia, Pa: WB Saunders Co; 1992:1167.
9. Pitta CG, Steinert RF, Gragoudas ES, et al. Small unilateral foveal hemorrhages in young adults. *Am J Ophthalmol.* 1980;89:96-102.
10. Haykowsky MJ, Findlay JM, Ignaszewski AP. Aneurysmal subarachnoid hemorrhage associated with weight training: three case reports. *Clin J Sport Med.* 1996;6:52-55.
11. Mokrohisky ST, Kesselman NE. Valsalva effect may mimic child abuse [letter]. *Pediatrics.* 1991;88:420.