High Speed Projectile Wounds: A Review of 22 Cases

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Introduction: With the rising incidence of urban violence related events, we observed a proportional rise in the incidence of victims of High-Speed-Projectile-caused wounds.
Methods: This is a retrospective study of 22 cases of High Speed Projectile-caused wounds attended at the Miguel Couto Municipal Hospital Emergency Ward (Rio de Janeiro, Brazil) between March 1993 and June 1999.
Results: Eleven patients were dead on arrival, three presented with severe lesions and died before or during the surgical procedures, and eight patients were operated and survived.
Conclusion: Because of the high destructive power of this kind of projectiles, the majority of these patients do not survive to be treated (do not arrive to the hospital in time). Those who are submitted for surgical treatment usually have multiple associated lesions, requiring complex treatment and high skilled surgeons. This study shows the urgency of investigating and proposing new therapeutic procedures for the treatment of this kind of wounds, that are far more severe and lethal than are the ordinary gunshot wounds.

Key words: projectiles, high speed; mortality; surgery; violence; wounds
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Summary Gas Pressures in Plasma and Spinal Fluid in "Normal" Humans

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Introduction: In Disaster Medicine, homeostasis of the respiratory gases takes part in the development of polyorganic pathology. Therefore it is desirable to study "normal" homeostasis.
Method: Tests on pO_2 and pCO_2 (mmHg), SO_2, pH, etc. and arterio-venous gradients (D(a–v)) are used commonly to study human respiratory gas homeostasis. Beginning from 1987, we used tests on the summary gas pressure (SGP, pS in mmHg) pS = pO_2+pCO_2. The D(a–v) on SGP are denoted as "gas functionals" [DpS = pSa–pSv] in mmHg. SGP tests neither exclude nor substitute conventional (pO_2 and pCO_2) tests, but include them as a part choosing only additive characteristic pressure. The knowledge of "normal" values for these tests are helpful for gas homeostasis.[1] The investigation has been carried out during air respiration in supine position from the "normal" persons. Blood samples were taken from aortae (a), s. coronarius (sC), bulbus v. jugularis int.(vJ), v. hepaticae (vH), a. pulmonalis (aP), v. renalis (vR), v. cava inf. (vC), cerebrospinal fluid – liquor (L). Cases with pO_2= 70–100 and pCO_2= 30–45 mmHg.

Results:

	pO_2	pCO_2	pS
a	91.7 ±0.54	36.6 ±0.21	128.3 ±0.60
sC	23.8 ±0.30	47.5 ±0.34	71.3 ±0.60
D(a–sC)	67.9 ±0.43	–10.9 ±0.26	57.0 ±0.42
a	85.7 ±0.65	37.4 ±0.23	123.1 ±0.67
vJ	38.0 ±0.57	47.0 ±0.24	84.9 ±0.54
D(a–vJ)	47.8 ±0.63	–9.6 ±0.26	38.2 ±0.58
a	90.4 ±0.56	39.4 ±0.31	129.8 ±0.70
vH	43.6 ±0.49	44.9 ±0.34	88.5 ±0.54
D(a–vH)	46.8 ±0.55	–5.5 ±0.25	41.3 ±0.60
a	86.7 ±0.52	37.6 ±0.26	124.3 ±0.60
aP	43.0 ±0.40	41.9 ±0.30	84.8 ±0.50
D(a–aP)	43.8 ±0.47	–4.3 ±0.21	39.5 ±0.45
a	88.1 ±0.81	36.5 ±0.45	124.1 ±0.8
vC	42.8 ±0.39	45.3 ±0.42	88.1 ±0.71
D(a–aC)	45.5 ±1.22	–8.8 ±0.79	36.7 ±1.21
a	88.8 ±0.56	38.4 ±0.23	127.2 ±0.60
vR	59.4 ±0.80	41.4 ±0.24	100.7 ±0,80
D(a–vR)	29.4 ±0.54	–2.9 ±0.16	26.5 ±0.50
a	83.0 ±1.8	38.8 ±0.56	121.7 ±1.4
L	81.3 ±1.97	46.3 ±0.76	107.5 ±1.11
D(a–L)	21.7 ±0.22	–7.4 ±0.67	14.3 ±0.31

Results:

	pH	SO_2
a	7.396 ±0.003	96.7 ±0.07
sC	7.345 ±0.005	38.0 ±0.70
D(a–sC)	0.051 ±0.002	58.7 ±0.73
a	7.391 ±0.004	96.7 ±0.10
vJ	7.353 ±0.003	68.2 ±0.74
D(a–vJ)	0.038 ±0.002	28.5 ±0.74
a	7.385 ±0.003	96.8 ±0.13
vH	7.360 ±0.003	76.8 ±0.62
D(a–vH)	0.025 ±0.002	20.0 ±0.58
a	7.395 ±0.003	96.3 ±0.10
aP	7.372 ±0.003	76.8 ±0.42
D(a–aP)	0.023 ±0.001	19.5 ±0.41
a	7.395 ±0.002	96.6 ±0.91
vC	7.389 ±0.002	77.1 ±1.19
D(a–aC)	0.015 ±0.002	19.6 ±0.73
a	7.388 ±0.003	96.5 ±0.10
vR	7.375 ±0.003	87.8 ±0.46
D(a–vR)	0.013 ±0.001	8.8 ±0.40
a	7.408 ±0.004	–
L	7.324 ±0.004	–
D(a–L)	0.084 ±0.007	–

Discussion: The "normal" pO_2, SO_2, pS levels are: (1) maximal in plasma of vR blood and L (with pO_2>pCO_2); and (2) minimal in plasma of sC blood (with pO_2<pCO_2). In other regions, the levels are found between vR and maximal ones, where pO_2 and pCO_2 relationships can be different. The evaluation of pO_2 and pCO_2 relationships promotes more complete understanding of each organ's role in regulation of oxyhemoglobin regional dissociation process through their metabolism.

References

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