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Reply

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Sir: We were really interested by the comments of Pautas and Wysocki about the paper "Estimation of direct costs and resource allocation in intensive care". In 1996 we performed an audit on 215 intensive care stays in all units of our common database [1] and found on the whole a better correlation than Pautas et al. [2]. A methodological question is that we only computed correlations between the two results (those from the physician in charge and those from the physician in control). Calculating the amount of medical activity lost through the gap between the two results supposes that the independent physician controlling the patient's chart is a "gold standard", which is questionable. Of course the more missing items there are, the more related units are penalized financially. However, an up-to-date method for resource allocation in teaching hospital intensive care units is based upon number of failures, through relevant Omega items among several parameters.

In our audit, the number of items as well as the calculation of scores show good reliability concerning Omega 1, Omega 2, Omega 3, total Omega, length of ventilation, intubation, failures:

Intraclass correlation coefficients

	No. of items	Scores
Omega 1	0.83	0.85
Omega 2	0.81	0.90
Omega 3	0.98	0.97
Total Omega		0.96
Duration of ventilation		0.95

Kappa

Circulatory failure	0.96
Respiratory failure	0.64
Renal failure	0.88
Intubation	0.91

An identical audit is to be performed again in the same units. The poor impact of corrective measures mentioned by Pautas et al., even at a local level, strengthens the need for repeated audits, which are generally cost-effective [3].

A method of prospective quality control is still a major issue as suggested by Pautas and Wysocki.

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Hemodynamic profile in severe ARDS

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Sir: I read with great interest the recent report by Squara et al. entitled "Hemodynamic profile in severe ARDS" [1].

This topic was a subject of interest for our group in the 1980s [2] and we described the echocardiographic pattern of acute cor pulmonale observed in this clinical setting [3]. In its most severe form, defined by a right ventricular/left ventricular end-diastolic area ratio > 1 on an apical four-chamber view, outcome was always fatal [3]. However, in a more recent study of our echocardiographic data

in ARDS patients [4] we noticed that this severe form was no longer observed, since tidal volume has been reduced from 13 ml/kg on average in the 1970s–1980s to 8 ml/kg in the 1990s.

Data collected by Squara et al. involved ARDS patients managed between September 1985 and March 1987. At this time, permissive hypercapnia suggested in 1990 by Hickling [5] was not yet used, and normocapnic ventilation was the rule. As a matter of fact, mean PaCO₂ in the patients enrolled in this report was 38.1 ± 8.7 mm Hg and confirms this statement. Peak airway pressure used during respiratory support in these patients (given in Table 3) is unexpected. In my experience, a peak airway pressure at 22.8 ± 7.9 cmH₂O cannot restore normocapnia in ARDS patients.* Unfortunately, the authors did not mention values of total compliance (CT) in their patients. With this mean peak airway pressure, a tidal volume of 10 ml/kg, as used in their study, and an average PEEP level at 8.4 ± 4, one can infer a plateau pressure < 20 cmH₂O and a CT > 60 ml/cmH₂O in the majority of patients, a finding unlikely in ARDS patients. In a recent multicenter study devoted to tidal volume reduction, Brochard et al. [6] found an average plateau pressure at 31.7 ± 6.6 cmH₂O in the control group of ARDS patients receiving mean tidal volume of 10.3 ± 1.7 ml/kg (mean PaCO₂ at 41.3 ± 7.6 mm Hg). Thus, I am somewhat concerned about the peak airway pressure reported by Squara et al. [1]. It seems unlikely that ARDS patients exhibiting pulmonary arterial hypertension and fatal outcome had been actually ventilated with such a low airway pressure.

As a minor comment I draw the attention of the authors to the fact that Benito et al. (reference 30) did not study the pressure-volume loop of the right ventricle, but that of the whole lung.

References

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* See erratum on page 247.

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ERRATUM

P. Squara • J.-F. A. Dhainaut • A. Artigas • J. Carlet and the European Collaborative ARDS Working Group

Hemodynamic profile in severe ARDS: results of the European Collaborative ARDS study

Intensive Care Med (1998) 24: 1018–1028

In the above original article in issue no. 10, in the caption of Table 3 “Paw” was incorrectly defined as “peak airway pressure”; this should read “mean airway pressure” (peak Paw for all patients was 39 ± 10 cmH₂O).