

LETTER TO EDITORS

(JULY 5, 2016)

VALIDITY OF MESOTHELIN IN OCCUPATIONAL MEDICINE PRACTICE

Dear Editor,

Malignant mesothelioma (MM) is a rare cancer with poor survival. The estimated 5-year relative survival after diagnosis is 7% on average across Europe [1]. Malignant mesothelioma is frequently diagnosed in an advanced stage of the disease and an accurate diagnosis is difficult. We therefore appreciate the study of Smolková et al. – recently published in this journal – to assess the benefit of serum soluble mesothelin-related peptides (SMRPs) in detection and diagnosis of the MM [2].

However, the analysis by Smolková et al. is incorrect and misleading. The total number of 309 patients with a history of occupational asbestos exposure were analyzed. Among 16 MM patients, 12 had increased SMRPs levels and among the non-MM patients 35 had increased SMRPs levels and 258 of them did not. This will lead to the contingency table as shown in the Table 1. Using this as the basis for the following calculations we get the published sensitivity of 0.75 but not the specificity of 0.962. The specificity

is defined as the proportion of non-MM patients testing negative. That is $258/(35+258) = 0.881$ (95% confidence interval (CI): 0.838–0.915). Likewise, the correct positive predictive value (PPV) is 0.255 (95% CI: 0.139–0.404) and the correct negative predictive value (NPV) is 0.985 (95% CI: 0.961–0.996). The greatest difference between the false published figures and the correct values appears for the PPV.

Furthermore, it also seems that the published unadjusted diagnostic odds ratio of a positive SMRPs level of 76.8 is not correct. The crude odds ratio derived from the contingency table is 22.11 (95% CI: 6.76–72.35). In the light of the correct values, especially due to the much lower PPV and the diagnostic odds ratio, a different interpretation of the results is demanded.

We also encourage the authors to incorporate other possible relevant factors, such as age and sex into the analysis as suggested by Pesch et al. [3].

Key words:

Occupational exposure, Asbestos, Malignant mesothelioma, Mesothelin, Diagnostic test, Validity

Table 1. Malignant mesothelioma (MM) and soluble mesothelin-related peptides (SMRPs) levels for patients occupationally exposed to asbestos

SMRPs in serum	Patients (N = 309) [n]	
	with MM	without MM
> 1.5 mmol/l	12	35
≤ 1.5 mmol/l	4	258

REFERENCES

- Francisci S, Minicozzi P, Pierannunzio D, Ardanaz E, Eberle A, Grimsrud TK, et al. Survival patterns in lung and pleural cancer in Europe 1999–2007: Results from the EURO CARE-5 study. *Eur J Cancer*. 2015;51(15):2242–53, <http://dx.doi.org/10.1016/j.ejca.2015.07.033>.

2. Smolková P, Nakládálová M, Zapletalová J, Jakubec P, Vildová H, Kolek V, et al. Validity of mesothelin in occupational medicine practice. *Int J Occup Med Environ Health*. 2016;29(3):395–404, <http://dx.doi.org/10.13075/ijomeh.1896.00637>.
3. Pesch B, Brüning T, Johnen G, Casjens S, Bonberg N, Taeger D, et al. Biomarker research with prospective study designs for the early detection of cancer. *Biochim Biophys Acta*. 2014;1844(5):874–83, <http://dx.doi.org/10.1016/j.bbapap.2013.12.007>.

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