Use of the age-adjusted D-dimer as a screening tool for pulmonary thromboembolic disease in an older inpatient population

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Aims

Does an age-adjusted D-dimer threshold (age multiplied by ten) improve the specificity without modifying the sensitivity when compared to the absolute D-dimer value in an older inpatient population?

Methods

All patients that had undergone a CT pulmonary angiogram (CTPA) between 1 August 2012 and 1 August 2013 were collated. We calculated and compared the sensitivity and specificity of the D-dimer test as a screening tool for a pulmonary embolus using both the absolute value (greater than 250 ng/mL in our trust) versus an age-adjusted D-dimer value (age multiplied by ten).

A comparison was then made in two separate populations: those aged from 17 to 69 years of age and those aged from 70 to 100 years of age. Patients that had undergone a CTPA but without a D-dimer were excluded.

Results

613 patients had undergone a CTPA, of which 334 were female and 279 male. The median age was 79 years. There were 308 patients in the 17–69 age group, with 305 patients in the 70–100 age group.

The table below illustrates the sensitivities and specificities in the two different age categories.

	Age (years)	
	17–69	**70–100**
Sensitivity of absolute D-dimer value	94.4%	95.2%
Sensitivity of age-adjusted D-dimer value	90.1%	91%
Specificity of absolute D-dimer value	24%	8.3%
Specificity of age-adjusted D-dimer value	59.1%	67.1%

Conclusions

D-dimer is a fibrin degradation product; however, concentrations increase with age. Older patients undergo unnecessary investigations when an absolute D-dimer value is used as a screening tool, as opposed to an age-adjusted D-dimer value. We have shown that, in a population aged 70 or over, the age-adjusted D-dimer value improves the specificity without modifying the sensitivity in screening for pulmonary thromboembolic disease. For our older patients, perhaps the age-adjusted D-dimer should be used routinely as a screening tool for pulmonary thromboembolic disease? ■

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