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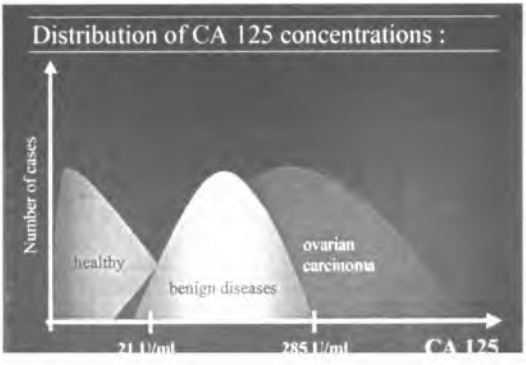
Estimation of CA 125 concentration in patients with congestive heart failure

Tumour marker CA 125 is a protein, coded by the gene situated in the long arm of chromosome 17. Since 1981 it has been used in the diagnostics of ovarian cancer. For the majority of healthy people, the level of CA 125 does not exceed the limit value of 21 U/ml, whereas in women suffering from ovarian cancer the values can be even 10,000 to 20,000 times higher. The estimation of CA125 level in blood serum is applied in screening examination (as an element of screening programmes), in the estimation of malignancy degree, prognostication (where the speed of decline after chemotherapy is essential) as well as in monitoring the disease progress. Its diagnostic effectiveness in selected groups of patients is defined by sensitivity estimated at approximately 75% and specificity at 95% (1, 3, 5, 6).

In practice diagnostic specificity of CA125 concentration is lower as it is limited by the increase of concentration in different states: in healthy women it is the first trimester of pregnancy and menstruation; in non-tumour diseases such as: pericardial inflammation, liver diseases (cirrhosis, liver necrosis), endometriosis of phases II and III, ovarian cysts. Tumour diseases other than ovarian cancer include, principally, bladder cancer, primary liver cancer, as well as carcinoma of the pancreas, bronchia, stomach, large intestine and rectum (4, 7).

A wide range of values is observed in the cases of ovarian cancer while in benign diseases the values seldom exceed 285 U/ml (Fig.1).



N a g e l e and his associates claimed that cardiac heart failure might lead to the increase in the level of CA 125 in blood serum. This observation is significant in view of high prevalence of congestive heart failure. In total of the population the number of new cases is estimated at 1.2 – 1.4 per 1,000 people (Fig. 2). The incidence of chronic congestive heart failure tends to grow with age (7).

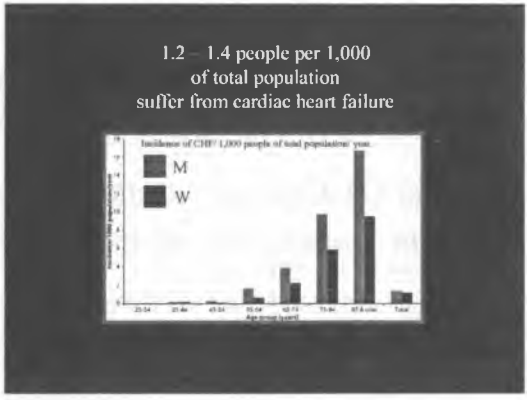


Fig. 2

The aim of the paper was to estimate CA 125 concentration in patients with congestive heart failure as well as to define the range of changes taking place according to the advancement of the disease.

MATERIAL AND METHODS

The research included 39 patients: 20 women and 19 men aged 45–75 with a diagnosed congestive heart failure graded II–IV in the NYHA classification. CA 125 concentration in blood serum of the patients was measured by means of chemiluminiscent method, using OM-MA assays, on the analyser Immulite 1 manufactured by Diagnostic Product Corporation (USA).

RESULTS

It has been found that CA 125 concentration in blood serum of the patients with congestive heart failure was on average approximately 37 U/ml and was included in the range from 5.6 to 874 U/ml (Fig. 3).

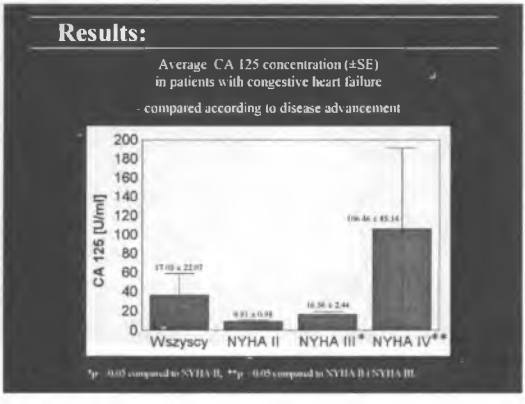


Fig. 3

Significant statistic differences in concentration rates were dependent on the disease advancement. The highest concentration rates were observed in patients classified in group IV NYHA. It had been agreed that the limit value of CA 125 concentration for diagnosis of ovarian carcinoma would be 21 U/ml. The concentration increase above the limit value was observed in 33.3% of the patients with CA 125 > 21 U/ml (Fig. 4).

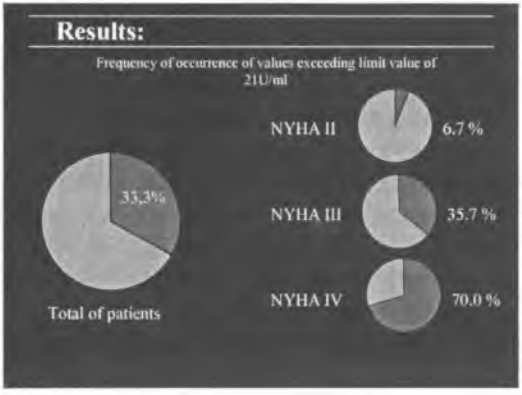


Fig. 4

DISCUSSION

The results that have been obtained allow us to draw a conclusion that the increase of CA 125 concentration in blood serum occurs in patients with congestive heart failure. The size of the increase in CA 125 concentration is dependent on the degree of congestive heart failure estimated in the NYHA scale. The measurement of CA 125 concentration in patients with congestive heart failure can add up extra information useful in the evaluation of the state of the sick person since the concentration of the marker may be the result of pathological changes that occur in pericardium. The mechanisms that cause the increase in CA 125 concentration in congestive heart failure are not known. It is presumed that the major source of CA 125 in these patients may be pathologically changed pericardium (7). Epithelioid cells of pericardium include CA 125 in the apical part, which can be released in an increased amount to the extracellular space under the influence of a variety of stimuli including the inflammatory ones. Overproduction of CA 125 is described in diseases involving the presence of transudates or exudates in somatic cavities e.g. cirrhosis, tuberculous meninges inflammation (4, 7).

The occurrence of inappropriate values of CA 125 in 1/3 of patients with congestive heart failure brings the necessity of taking into consideration the degree of congestive heart failure in the interpretation of the results obtained in screening examinations and in the establishment of the level of advancement, prognostication as well as monitoring the ovarian cancer treatment.

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SUMMARY

Tumour marker CA 125 is used in the monitoring results of treatment woman with ovarian cancer. Its diagnostic effectiveness in selected groups of patients is defined by sensitivity estimated at approximately 75% and specifity at 95%. In practice diagnostic specificity of CA 125 concentration is lower as it is limited by the increase of concentration different tumour diseases (bladder cancer) and non-tumour diseases (pericardial inflammation). The aim of the paper was to estimate CA 125 concentration in patients with congestive heart failure as well as to define the range of changes taking place according to the advancement of the disease. The research included 39 patients: 20 women and 19 men aged 45–75 with diagnosed congestive heart failure graded II–IV in the NYHA classification. It has been found that CA 125 concentration in blood serum of the patiens with congestive heart failure was on average approximately 35.4 ± 24.8 U/ml and was included in the range from 5.6 to 874 U/ml (limit value 21 U/ml). The concentration increase above the limit value was observed in 34% of patients. Significant statistic differences in CA 125 concentration rates were dependent on the disease advancement .The highest concentration rates were observed in patients classified in group IV NYHA. The results that have been obtained allow us to draw a conclusion that right interpretation of CA 125 concentration in clinical practice (screening examinations, establishment of the level of advancement, prognostication as well as monitoring the ovarian cancer treatment) brings the necessity of taking into consideration the degree of congestive heart failure.

Ocena stężenia CA 125 u pacjentów z niewydolnością serca

Marker CA 125 wykorzystywany jest w praktyce klinicznej do monitorowania leczenia pacjentek z rakiem jajnika. Jego efektywność diagnostyczna w wyselekcjonowanych odpowiednio grupach pacjentek definiowana jest przez czułość szacowaną na ok.75% i swoistość ok. 95%. Przy badaniach prowadzonych w populacji ogólnej swoistość diagnostyczną stężenia CA 125 ograniczają wzrosty stężenia obserwowane w innych chorobach nowotworowych (np. raku pęcherza) oraz nienowotworowych (np. zapaleniu osierdzia). Celem pracy była ocena stężenia CA 125 u pacjentów z niewydolnością serca, określenie zakresu występujących zmian oraz próba ustalenia czynników decydujących o wielkości obserwowanych zmian. Badaniami objęto grupę 39 pacjentów: 20 kobiet i 19 mężczyzn w wieku 45 – 75 lat z rozpoznaną niewydolnością serca w stopniach II–IV klasyfikacji NYHA. Stwierdzono, że stężenie CA 125 w surowicy pacjentów z niewydolnością serca wynosiło średnio 35,4 ± 24,8 U/ml i mieściło się w zakresie od 5,6 do 874 U/ml (norma 21 U/ml). Wzrost stężenia powyżej wartości granicznej stwierdzono u 34% pacjentów. Istotne statystycznie różnice w stężeniu CA 125 zależne były od stopnia zaawansowania choroby. Wartości najwyższe obserwowano u pacjentów zaliczonych do grupy NYHA IV. Uzyskane wyniki pozwalają przypuszczać, że prawidłowa interpretacja wyników pomiarów stężenia CA 125, wykorzystywana w praktyce klinicznej w badaniach skryningowych , ustalaniu stopnia zaawansowania, prognozowaniu i monitorowaniu leczenia raka jajnika, wymaga każdorazowo uwzględnienia wydolności układu krążenia.