

Serum Tumor Markers: Comparison between Guidelines and the Clinical Practice in a University Hospital Center

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Abstract

Background: Among the different existing serum tumor markers (TM), none fulfills criteria for a clinical practice in screening, diagnosis, prognosis, targeted therapy and follow-up, due to a weak sensitivity and specificity. Guidelines from different national and international expert groups in cancer have been edited relating to the best use of those serums TM for a given cancer.

The goal of our study was to evaluate the pattern of serum TM used in our University Hospital Center and to determine whether their prescriptions were appropriate related to those guidelines.

Methods: We analyzed all the prescriptions including at least one serum TM among CEA (carcino-embryonic antigen), CA (carbohydrate antigen or cancer antigen) 125, CA15-3, CA19-9, NSE (neuron-specific enolase) and Cyfra 21-1 recorded in our biochemistry department between June 2012 and June 2013. For each prescription, we determined the clinical department, the use of the serum TM (diagnostic phase or follow-up), the serum TM and their number.

Results: We analyzed 1682 serum TM among 778 prescriptions. Whatever the medical or surgical department, CEA and CA19-9 were the two most prescribed TM corresponding to 29.8% and 25.4% of all assays, respectively. However, we noticed a more targeted prescription of TM for departments with an oncology activity. We also observed that serum TM was mainly used for diagnosis in about 2/3 of cases, which isn't consistent with national and international guidelines.

Conclusion: Oncologists have a targeted use of serum TM which enables a better rationalization of prescriptions while non-oncologists are less experienced resulting in multiple TM prescriptions for unrelated cancers. Discrepancies regarding the use of serum TM among national and international guidelines still exist; this requires a harmonization for a better clinical care of cancer patients with a lower medical expenditure.

Keywords: Gfi a ' li a cf' a Uf_Yf/ ; i |XY|bYg' 7UbWf' X|U|bcgg/ 7UbWf' Z`ck!i d

WbWf' XUhg" 5a cb| ' hYUj UUY lcc'g Zf' cbW'c | gZ' Vlc'c | WU a Uf_Yfg UY cZ | fYU | bMYg' YmWbgh | b' a c' YW'Yg fdfch | bgz ['nw | d | Xg | ' mwdfch | bgz bi W | WUYg : h U i U Y d f c X | W X VmWbWf W'gUbXWb' YX'YX'Xcf' ei Ub | YX

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HA. ' H a cf' a Uf_Yf/ 795. ' 7UfV|bcYa Vmrb|W 5bh | Yb/ DG5. DfcgUfM GdWV W5bh | Yb/ 5: D' 5' dNU: Ycdfch | b/ BQ. ' B Y fcb! GdWV W0bc UY/ B576. BU|cbU' 5WXYa mCZ7 | b | W' 6 | cWYa | gfn' 5G7C. ' 5a Yf | Wb' GeV | mCZ 7 | b | W' CbW'c | m' 9; HA. ' 9i fcdYU b ; fci d'cbH a cf' A Uf_Yfg < 5G < U hY5i | cf | AXYGUbA

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5WfX|b | ' h' hYK cf' X < YU h' Cf | U | r | U | h | cbz WbWf' | i fYU a cb | hY ' YU | b | ' W | g' cZ a cf | V | X | m | U | b | X a cf | H | m | k | cf' X | XZ | k | h | U | d | f | d | ja UYm | % ' a | ' | ' | cb' bYk ' W | g | U | b | X, "& a | ' | ' | cb' WbWf' fYU | X | XUhg | b | 88% & U | b | X | h | g | Y | d | W | X | h | U | b | b | i | U | WbWf' W | g | k | ' | ' | f | g | Y | Z | ca | % ' a | ' | ' | cb' | c' & k | h | h | b' hYb | Y | h | & X | W | X | g | O | C | = b | h | g | W | b | h | l | z | Y | U | f | m | X | U | bcgg | h | f | Y | X | h | Y | U | h | U | b | X | Y | W | b | h | Z | `ck!i d UfY | W | h | W | h' c' fX | W

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i gX'Vnd\ng]Mbg'lc'\Yd' h' Ya']b' h' Yf' Wb]W' gH]b[" H' YbUVYU
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 c`X`d`f`g`b`g`f`B58CDE`" `5`g`Y`l`d`Y`M`X`Z` \`Y`d`U`c`j`U`f`c`!`Y`b`h`f`c`c`m`

X`d`U`f`a`Y`b`h`k`U`g`h`Y`a`U`c`f`d`f`Y`G`M`V`f`c`Z`7`9`5`z`7`5`%`!`-`U`b`X`5`:`D`k`|`Y`
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 f`H`L`V`Y`&`E`" `G`d`f`j`g`b`|`n`a`j`b`h`f`b`U`" `a`Y`X`j`W`Y`k`U`g`h`Y`a`c`g`i`j`a`d`c`f`h`b`h`
 d`f`Y`G`M`V`f`c`Z`7`5`%`!" `U`b`X`D`G`5`"

	CA125	CA15-3	CA19-9	CEA	AFP	NSE	Cyfra 21-1	PSA
Number of assays (%)	115 (6.8%)	140 (8.3%)	428 (25.4%)	501 (29.8 %)	169 (10.0 %)	199 (11.8 %)	32 (1.9%)	98 (5.8%)
Cost (euros)	1863	2079	6934	7440	2875	4245	778	1085
Diagnosis (% of total)	93	76.4	80.6	78.9	94.7	69.5	97	91.8
Follow-up (% of total)	7	23.6	19.4	21.1	5.3	30.5	3	8.2
Major prescriber	Visceral surgery	Internal medicine	Hepatogastro enterology	Hepatogastro enterology	Hepatogastro enterology	pneumology	pneumology	Internal medicine

HVY&G a a UmcZh Ygfi a HA`dfYGMVf`Zf`Yf`Z`f`Y`e`i`Y`b`W`n`f`U`b`l`j`b`l`Z`c`a`%`("`l`c`\$`)
 1`f`H`L`V`Y`&`E`" `Y`b`z`k`Y`Y`U`a`j`b`Y`X`h`Y`a`U`c`f`d`f`Y`G`M`V`f`Z`f`Y`U`W`g`f`i`a`H`A`U`a`c`b`|`" `%`a`Y`X`W`U`b`X`g`f`j`W`X`d`U`f`a`Y`b`g`j`b`W`X`j`b`|`h`Y`d`f`j`g`b`W`b`f`Y`U`X`h`Y`Y`g`l`V`j`g`a`Y`b`h`c`Z`U`W`a`a`c`X`j`c`b`Z`f`X`d`Y`b`X`b`h`c`X`d`f`g`b`g`f`B58CDE`" `5`g`Y`l`d`Y`M`X`Z` \`Y`d`U`c`j`U`f`c`!`Y`b`h`f`c`c`m`

5`g`h`Y`Y`U`h`Y`d`b`X`h`f`g`U`Y`f`j`g`b`|`U`b`X`d`f`Y`G`M`V`f`Z`f`Y`f`Z`f`Y`e`i`Y`b`W`n`f`U`b`l`j`b`l`Z`c`a`%`("`l`c`\$`)
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 9`i`f`c`g`h`m`U`f`k`j`h`7`9`5`U`b`X`7`5`%`!`-`f`Y`d`f`Y`G`M`V`f`Z`f`Y`f`Z`f`Y`e`i`Y`b`W`n`f`U`b`l`j`b`l`Z`c`a`%`("`l`c`\$`)
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 X`d`U`f`a`Y`b`h`k`U`g`h`Y`a`U`c`f`d`f`Y`G`M`V`f`Z`f`Y`f`Z`f`Y`e`i`Y`b`W`n`f`U`b`l`j`b`l`Z`c`a`%`("`l`c`\$`)
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 `c`k`Y`g`i`d`f`Y`G`M`V`f`Z`f`Y`f`Z`f`Y`e`i`Y`b`W`n`f`U`b`l`j`b`l`Z`c`a`%`("`l`c`\$`)
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-b`h`Y`g`W`b`X`d`U`f`c`Z`h`j`g`k`c`f`_`z`k`Y`Y`U`a`j`b`Y`X`h`Y`d`f`Y`G`M`V`f`Z`f`Y`f`Z`f`Y`e`i`Y`b`W`n`f`U`b`l`j`b`l`Z`c`a`%`("`l`c`\$`)
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 <`Y`d`U`c`j`U`f`c`!`Y`b`h`f`c`c`m`

Department	Prescription (No.)	Serum TM (No.)	Department	Prescription (No.)	Serum TM (No.)
Hepatogastro-enterology	164	353	Addictology	2	5
Pneumology	129	163	Hematology	2	8
Visceral surgery	103	240	EADOP	2	2
Internal medicine	82	197	ENT	1	1
Neurology	36	102	Prison centre	1	1

EADOP : Establishment of accommodation for Dependent Old Persons;

ENT : Ear, Nose and Throat department

795 Vi hibch75%!- 'lgfYwā a YbXXZf'Vch'XjU'bcggUbxZ'ck!
i d'cZw'cfYMU'WbWf"Gezci f'XUUG [[YghUh75%!- 'dfYGMdhjcbg
fYdfcVUVm]bUddfcdf]UHY]b'fY[UXg'hc'hY: fYbW'Ubx]bHfbUjcbU
[i]XY]byg"K \Yb'fY[UX]b['hY'k'c'ch'Y'X]Yg]Y'g'g'Yā 'WbWf'g
fHUVY%z'h'cgY[i]XY]byg'fY'Ygg'ca c['Yb'Yci'g": cf']bgU'WZ'Z'f'h'Y
[Ugf]WbWf'h'Y5G7C'XcbhdfcdgYUbnfYwā a YbX]jcb'k\]Yh'Y
9; HA 'Ubx'h'Y < 5G'Xcbh'fYwā a YbX'h'Y i'g'Y'c'Z'Y]h'Y'f'795'cf
75%!- 'Zf'XjU'bcggUbxZ'ck!i d" F'Y[UX]b['h'Y'd'U'W'U'g'WbWf'Z
k'Y' bch]W'X' Xjg'Y'd'U'W'U'g' W'k'Y'b' b'U'j'cb'U' U'X']b'f'f'U'j'cb'U
[i]XY]byg'75%!- 'lgbchfYwā a YbXXVn'h'Y: fYbW'U'YbWf'k'5G'Z'f
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Y'd'U'b' h'Y'f']b'U'd'f'c'd'f]U'Y' d'f'Y'G'M'd'h'j'cb'g' V'm'd'n'g'W'U'g' 8] Y'f'Y'W'g
W'k'Y'b' [i]XY]byg'U'g'Y']g'h'Z'f'ch'Y'f'HA' 'g'W'U'g'D'G'5"K \]Y'5G7C'z
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G'z'Q' -b' h'Y' d'f'Y'g'Y'b'i'd'U'Y'z'k'Y'X'Y]V'f'U'Y'm'X'X' b'c'h'a' Y'b]j'cb' ch'Y'f'
g'Y'b'h] W'g'V'W'h]g'k'c'U'g'c'di'V]g'Y'X'W'b]W' d'f'U'W'W' [i]XY]byg'Z'f'
W'bW'f'g']b'W'X]b['g'f'i'a' HA' f'U'j'cb'U' -bg]h' h'Y' Z'f' < Y'U'h' U'bx
7]b]W'9'W'Y'b'W]b'I b]h'X'?]b]X'ca' U'bx' Y'9'i'f'cd'Y'U'b'G'c'V'W'f'm'Z'f'
A'Y'X]W'CbW'c[n'g'Y'k'W'g'h'g' h'g'g'k'k'k'b]W'c'f['i' #U'bx\h'd'##
k'k'k'Y'ga'c'cf[# f'Y'g'Y'W]j'Y'n'i" G'W' X] Y'f'Y'h' U'bx' g'a'Y'j'a'Y'g'
Xjg'W'f'X'b'h' [i]XY]byg' W'k'Y'b' g'Y'b'h] W'g'V'W'h]g' a'U'm'V'U'g'Y' g'a'Y'

WbZ'g'cb'Z'f'd'n'g]W'U'g'U'bx'a'U'n'W'b'h]f]M'h'Y'c'Y'f'f'c'b'Y'c'i'g'd'f'Y'G'M'd'h]cb
c'Z'HA' "-h'g'g'f'd'f]g'b['h'U'ig'W'X] Y'f'Y'h'i]i]XY]byg'Z'f'h'Y'i'g'Y'c'Z'g'f'i'a'
HA' 'Y']g'i'W'k'Y'b' g'Y'b'h] W'g'V'W'h]g' U'bx' h'Y'f'Z'f'Y'\U'fa'c'b]h'U'j'cb
k'c'i'X'V'Y'b'W'W'g'f'm'h

-b'ci'f' h'f]h'f'm'i'c'g'd]h'U'z'k'Y'U'g'c'V'g'f]Y'X'h'U'ic'b'W'c[]g'g'\U'X'U'
h'f]Y'h'X' d'f'Y'G'M'd'h]cb' c'Z'g'f'i'a' HA' 'Y']X'b'W'X' V'm'U' 'ck' HA' #
d'f'Y'G'M'd'h]cb' f'U'j'c'f'HA' #D'L'f'f'U'V'Y' (E": cf']bg'U'W'Z' h'Y' d'Y'a'c'c[m'
X'd'U'f'a' Y'b'h'd'f'Y'G'M'V'g'a' U'b'm'B'Q'k]h' U'HA' #D'c'Z'%"": cf' h'k'c'ch'Y'f'
X'd'U'f'a' Y'b'g'k]h' U'g'f'c'b['U'W]j]h'm]b' cb'W'c[nā \Y'd'U'c[]g'f'c!
Y'b'h'f'c'c[m'U'X' j]g'W'U' g'f]Y'nā'k'Y'U'g'c' bch]W'X' U'b' U'd'f'c'd'f]U'Y'
d'f'Y'G'M'd'h]cb'z'f'Y'Y'U'X'V'n'U][\ 'Y'Y'c'Z'795'U'bx'75%!- z'k]h' U'HA' #D'
f'U'j'c'c'Z'&&]&"K \Yb'W'bg'X'f]b['ch'Y'f'X'd'U'f'a' Y'b'g'Y'g'Z'ā]]f'k]h'
cb'W'c[nāg'W'U'g'b'Y'f'c'g'f]Y'n'c'f'g'f]]W']b'h'g'j'Y'W'Y'z'k'Y'c'V'g'f]Y'X'
d'f'Y'G'M'd'h]cb'g'c'Z'h'Y'X] Y'f'Y'h'HA' 'k]h' U'a'c'h'ig'a']U' 'Y'Y'f'W'k'Y'b'
%&]& L'U'bx'U][\Y'f'HA' #D'f'U'c"]g'd'f'c'V'U'n'f'Y'W'g'U'X] Y'f'Y'h'i'g'Y'
c'Z'HA' /h'c'g'Y'V]c[]W' a'U'f'Y'g'f'Y'b'c'h'U'V'm'g'X]b'd'U'j]Y'b'g'k]h' U'c'g'g'
c'Z'V'c'X'n'k'Y][\h'U'bx'W'b'X]h]cb'c'f'a' Y'U'g]U'g'g'c' b'X'h'Y'd'f]a'U'm'h'a'c'f'
<ck'Y'Y'z'U'W]h]W']b'h'f'd'f'Y'U'j'cb'c'Z'h'c'g'Y'X'U'U'g'c'i'X'V'Y'a'U'X'Y'g'b'W'
]h'g'\] \m'X] W'h'lc' Wā' d'f'Y'X'd'U'f'a' Y'b'g'k]h' g'W'U'X] Y'f'Y'h'
U'W]j]h'm'f]Y'z' & U'bx' + d'f'Y'G'M'd'h]cb'g'Z'f' \Y'a'U'c'c[m'U'bx' g'f]]W'
]b'h'g'j'Y'W'f'Y'j'g' %& U'bx' %('Z'f' d'Y'a'c'c[m'U'bx' \Y'd'U'c[]g'f'c!
Y'b'h'f'c'c[nā'f'U'V'Y'g' U'bx'(E'

Y dYbXh fYzV]c`c[]gggci`Xh YfZfYdfcdcgYU'Uj]WZf`UVWfM
i gYcZHA zbclUVmZf bcb!cbW`c[]ggd\ng]Wbg`

FYZfYbWg

% FYdcfh K 7.`K cf`X 7UbVf` FYdcfh f8S%(L`-hfbU]cbU` 5[YbWn Zf
FYgUfW"

& 8A`<cYzYf` f8S)L Gfi a`h a cf`a U_fgDfh= `7]b]W`i h}]mñA YX
@UCV]g`+`&&&`"

' " 8A`<cYzYf` f8S*L` Gfi a` h a cf` a U_fg` dUfh` =!dfUWVW
WbgXfU]cbgUbX`]a]U]cbgcZ]g]b["A @C`A YX@UCVg` ,. %!`-`"

(" Gif[Ycb`7A z`