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Role of ProPSA Immunostaining in Fine Needle Aspiration of Metastatic Prostate Adenocarcinoma.

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Background:

ProPSA is the inactive precursor form of prostate specific antigen (PSA). Our earlier studies have shown that proPSA stains prostate adenocarcinoma (PCa) with a greater intensity than benign prostate tissue. Compared to PSA and prostate specific acid phosphatase (PAP), we have shown proPSA to be more sensitive, remaining of uniform intensity in different grades of PCa. Diagnostic role of proPSA in cytologic material has never been studied.

Design:

Twenty-four cytologic samples (23 fine-needle aspirations [FNA], 1 pleural fluid of metastatic PCa) were identified. Specimens for immunoperoxidase staining (IPOX) consisted of cell block sections and smears. IPOX was performed with proPSA (n=24), PSA (n=23) and PAP (n=21). The intensity of IPOX was categorized as negative, weak, moderate or strong, and extent of staining as diffuse (>50% of cells), patchy (11-50% of cells) or focal (<10% of cells).

Results:

The patients' age range was 51-88 (mean 70) years. Sites of metastasis included: liver (11), lymph nodes (7) [retroperitoneal, right and left supraclavicular, pelvic and peri-aortic], lung (2), and adrenal, penis, pleural fluid and right shoulder soft tissue (1 each). ProPSA showed strong to moderate & diffuse or focal staining in 15 (62.5%), weak & diffuse or focal in 7 (29.2%), and 2 (8.3%) cases were negative. PSA showed strong to moderate & diffuse or focal staining in 13 (56.5%), weak & diffuse or focal in 4 (17.4%), and 6 (26.1%) cases were negative. PAP showed strong to moderate & diffuse or focal staining in 9 (42.8%), weak & diffuse in 1 (4.7%), and 10 (47.6%) cases were negative. ProPSA showed moderate to weak & diffuse or focal staining in the 4 (19%) cases that were negative for both PSA and PAP. The only two cases that were negative for proPSA were also negative for PSA and PAP. PSA or PAP was strong to moderate & diffuse in 4 (19%) cases, which showed weak and diffuse or focal proPSA staining.

Conclusions:

Compared to PSA and PAP, proPSA is a more sensitive marker for diagnosing metastatic PCa, showing more intense and diffuse immunoreaction. ProPSA can be extremely helpful in poorly-differentiated PCa where both PSA and PAP might be negative. A panel of immunostains including proPSA should be performed when metastatic PCa is suspected. ProPSA IPOX staining can be adequately performed in cytologic material.