00298 Cost-effectiveness of Active Surveillance, Ultrasound-guided Fine Needle Aspiration Cytology, and Thyroidectomy in the Management of Papillary Thyroid Micro-carcinomas

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Aims: The appropriate management of papillary thyroid micro-carcinomas (<1cm) have been questioned due to their indolent nature. Current guidelines recommend active surveillance (AS) of sonographically suspicious sub-centimetre (<1cm) thyroid nodules as an alternative to fine needle aspiration cytology (FNAC) or surgery. We performed a cost-effectiveness analysis to evaluate the management strategies of sonographically suspicious sub-centimetre nodules.

Methodology: Markov models were constructed to perform the cost-effectiveness analysis of the following strategies: 1) AS followed by FNAC; 2) FNAC followed by AS; 3) FNAC followed by surgery; and 4) No intervention. The reference case was a 40-year old patient with a sonographically suspicious sub-centimetre thyroid nodule recently discovered on ultrasound imaging. FNAC diagnostic performance, transition probabilities, costs, and health utilities were obtained from literature. Willingness-to-pay threshold was set at $100,000/quality-adjusted life-year. Sensitivity analyses were performed to evaluate model uncertainty.

Result: FNAC followed by AS was the most cost-effective strategy for AS duration $\leqslant$10 years. FNAC followed by surgery was cost-effective compared to FNAC followed by AS otherwise. No intervention was cost-effective for patients >90 years old or remaining life expectancy <4.8 years. AS followed by FNAC was not cost-effective for all AS duration and patient's age analysed. FNAC followed by surgery cost $430.24 more per additional year of known diagnosis compared to FNAC followed by AS. The AS strategies carry a risk that malignancies will continue to undergo clinical progression after patients are discharged at the end of surveillance. This risk decreases as the duration of AS increases.

Conclusion: We proposed an algorithm to guide the choice of management strategies in sonographically suspicious sub-centimetre nodules based on patient's remaining life expectancy, AS duration, risk of progression, and willingness-to-pay for a known diagnosis.