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UTI TO INFANT - DIAGNOSTIC TRAPS

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ABSTRACT:
UTI IS ONE OF THE MOST DIFFICULT DIAGNOSES IN INFANCY, DUE TO CLINICAL MANIFESTATIONS FROM ATTENUATED TO POLYMORPHS.
THE CORRECT DIAGNOSIS RAISES A NUMBER OF PROBLEMS, STARTING WITH THE TECHNICAL ONES, THE CORRECT COLLECTION OF URINE CULTURE AND ENDING WITH THE ALGORITHM FOR DIAGNOSIS AND PREVENTION OF RENAL SCARS. THE STUDY CONDUCTED ON INFANTS SHOWS AN IMPORTANT WEIGHT OF UTIS FROM INFANTS' HOSPITALIZED INFANTS.
PROPER ANTIBIOTIC TREATMENT, AFTER THE RESULTS OF THE ANTIBIOGRAM, ENSURES HEALING, SUBSEQUENT SUCCESSIVE CONTROLS SHOULD BE INCLUDED IN THE FOLLOW-UP PROTOCOL AND RECURRENCE PREVENTION.

KEYWORDS: UTI, SUGAR, PREVENTION, ANTIBIOTIC.

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UTI assumes colonization with microorganisms in the urinary tract and association of clinical symptomatology. It described after location and clinical manifestations several categories; pyelonephritis, cystitis, asymptomatic bacteriuria (detection of bacteriuria in an insignificant titre and no associated clinical manifestations) or UTI with undetermined localization. By convention, a value of more than 10^5 bacteria / mm^3 was considered significant in order to establish the diagnosis of UTI[9].

Evolutionally, the described forms are with different terminologies - acute UTI (clinical manifestations and significant bacteriuria), recurrent UTI (repeated episodes with negative urocultures) and persistent UTI (positive uroculture even in the absence of symptomatology)[10].

All studies have revealed only a "predisposition" of the UTI according to gender: the female is more commonly affected, the explanations being inclusive of anatomical - short urethra, adjacent to the rectum. Certain physiological conditions (pregnancy involving compression in the ureters or bladder, relaxation and stasis in the pyelocaliceal system) or pathological (constipation with compressive mechanical effect or bacterial transparietal migration between the rectum and the bladder, create the premises for the appearance or recurrence of UTI[11].

In infants, the literature appreciates a double prevalence in girls versus boys (6.5% vs. 3.5%), much higher at 1-2 years (8.1% in girls vs. 1.9% in boys). In boys circumcised, the UTI frequency is low (approximately 10 times) less than uncircumcised boys.

Age of infant is an age that raises many traps toward correct diagnosis, treatment, evolutionary follow-up, clinical picture[12].

Symptomatology is nonspecific and polymorphic: fever, loss of appetite, agitation, vomiting, diarrhea, static or downward weight curve. Practically, UTI diagnosis can be diagnosis of exclusion, the illness mimicking other diseases (digestive, neuropsychic, flu itself), and less suggesting a kidney disorder. Another age specificity, linked to the anatomical aspect - a short, horizontal ureter, with an imperfect functional antireflux mechanism, predisposes the infant to the appearance of high UTI (pyelonephritis) with a high risk of kidney damage and scarring, vesicoureteral reflux being on the other hand the most common and most severe in this age.

Any flora apparently without a clinical cause in the infant leads to investigations for the UTI, the more the baby is younger (<2 months) and the symptoms associate dehydration and toxic condition[13].

There is, as an example of the first intention, LE test is a rapid and indicative test (leukocyte esterase-nitrite test), the confirmatory paraclinical exam is the urine culture that have to be properly aseptically collected, in compliance with the local hygiene rules.

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[9] B. Foxman The Epidemiology of urinary tract infection "Nature Reviews Urology", 7, 653–660, 2010

[10] Winberg J, Andersen HJ, Bergström T, Jacobsson B, Larson H, Lincoln K. Epidemiology of symptomatic urinary tract infection in childhood. Acta Paediatr. 1974;63(s252):1-20

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Again, infant age imposes limitations on urine culture collecting techniques, the lack of predictability of the mictional act, the reduced bladder capacity, the imprecise temporal location of the first urine "in the morning" makes it quite improbable to use the midstream clean-catch method, possible and reliable technique for older children and adults.

Other collector possibilities are: sterile collector (plastic bag attached to the perineum), collecting pads (Euron, urial), bladder catheterization or suprapubic bladder puncture. There are limitations and inconveniences of each procedure: sterile bags must be handled by specialized personnel, attachment to the perineum is done after hygiene and rigorous disinfection of the area immediately after collected the sterile container with the pathological product sample must be sent to the sowing laboratory, or improper handling of the container results in a very high risk of contamination and, consequently, false positives, collector swabs present the same high risk of contamination, iar cateterismul vezical si punctia vezicala suprapubiana sunt masuri invazive, primite cu reticenta de catre parinti, dar din punct de vedere logic, prin accesarea directa a vezicii urinare, par cele mai fiabile metode de recoltare sterila a urinii. Disinfection of the skin, the puncture guided by a trocar placed suprapubian assumes a small degree of urine retention, the incidents can accidentally affect the intestine and can trigger a peritoneal sowing under low immunity conditions characteristic of the young age.

Bladder catheterization is usually performed in urology; the catheter insertion is associated with increased risk of infection.

There is no infallible collection method to ensure this "gold standard" indispensable to the UTI diagnosis – urine culture. Although the invasive measures appear to be more reliable and less affected by false positive results, rarely resort to these (psychological background of the parent "injury" of the child, necessity of maneuvers in specialized services, etc.)[14].

The most commonly used methods in the order of use are: sterile urine bags or urine collector for the "midstream clean-catch" method. The risk of contamination of the sample at the time of collecting is still high and the number of false positives is increased with the inevitable consequences - antibiotic abuse, some with nephro / ototoxic potential, intestinal microbial alteration, prolonged diarrheal episodes, stagnation or weight loss, impairment of status nutritional and biological somatic of the infant's immature organism[15].

A 12-month study was performed in infants hospitalized in the Pediatric Clinic with unclear symptomology, inconclusive for UTI (fever, vomiting, anorexia, growth failure, diarrhea, etc.), by performing urine cultures by the perineal adhesive bag method.

Of the 106 confirmed cases, out of a total of 430 cases of infants hospitalized in one year, at the repeat of urine cultures, after 24 hours, by the same technique, 82 cases were found to have significant bacteriuria (> 100,000 cfu/ml), the remaining 24 cases being counted as false positives, the percentage being significant.(Figure 1)

[14] G. Beyene, W. Tsegaye, Bacterial uropathogens in urinary tract infection and antibiotic susceptibility pattern in jimma university specialized hospital, southwest Ethiopia, Ethiop J Health Sci, 21 (2011) 141-6

[15] Zhanel, GG, Hisanaga, TL, Laing, NM et al. Antibiotic resistance in Escherichia coli outpatient urinary isolates: final results from the North American Urinary Tract Infection Collaborative Alliance (NAUTICA). Int J Antimicrob Agents. 2006; 27: 468–475.

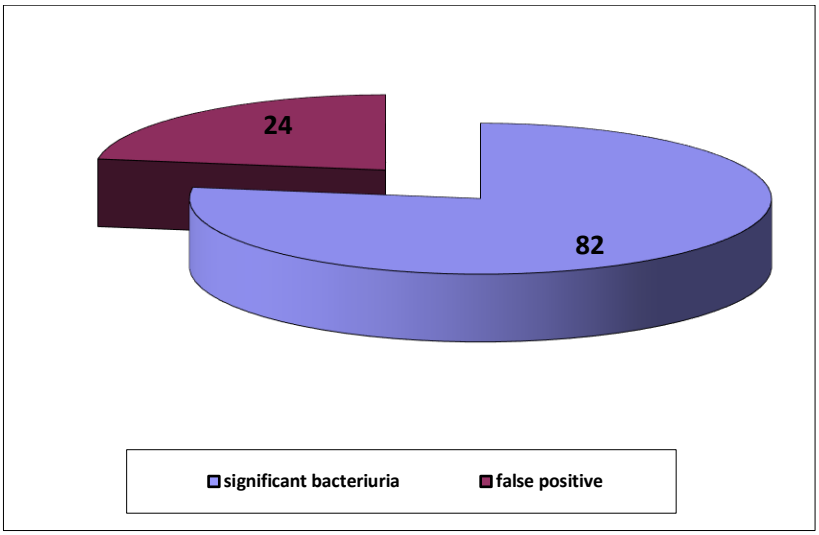

Figure 1

In all 82 cases of UTI, antibiogram were performed and the etiology was varied: 56 cases presented E. coli, 10 cases Klebsiella, 9 Proteus, 6 Pseudomonas, 2 Enterococcus, 3 Staphylococcus aureus, 1 group B Streptococcus. B. (Figure 2)

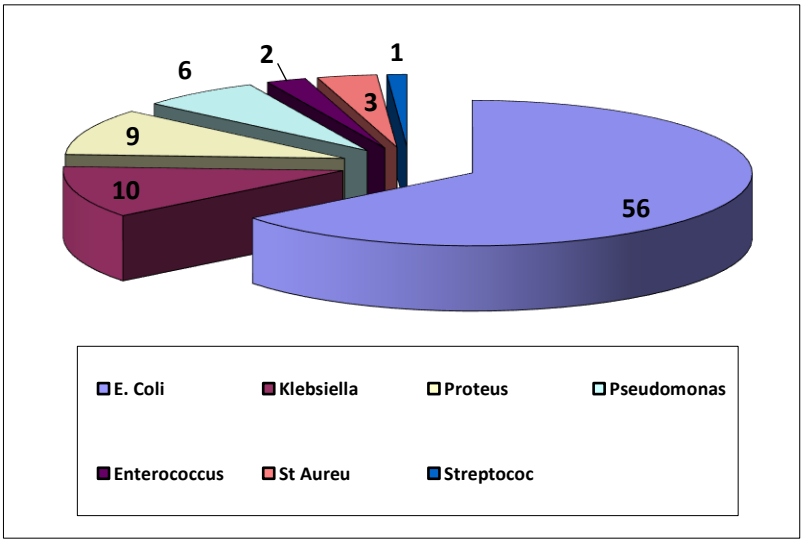

Figure 2

Antibiotic treatment started with monotherapy, in 9 cases it was necessary to supplement the initial schedule with a second antibiotic, usually an aminoglycoside. According to the antibiogram, the antibiotics used were Ampicillin (8 cases), Cefort (35 cases), Sulcef (24 cases), Cefuroxime (7 cases), Gentamicin (4 cases) and Amikozit (17 cases), including dual therapy. (Figure 3)

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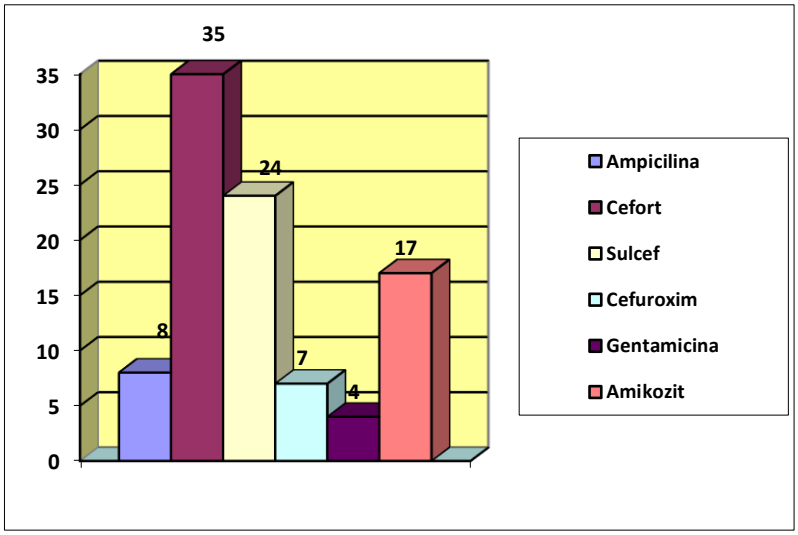


Figure 3

Follow-up urine cultures on the 2nd to 3rd day of treatment demonstrated the absence of significant bacteriuria in 38 infants (46.34%), at 7 days of treatment all urine cultures were negatively.

The recurrence was recorded in 21 cases in the first 6 months, 7 of which complementary imaging methods (mictional cystography, renal ultrasound) revealed malformative changes (hydronephrosis, vesicoureteral reflux). (Figure 4)

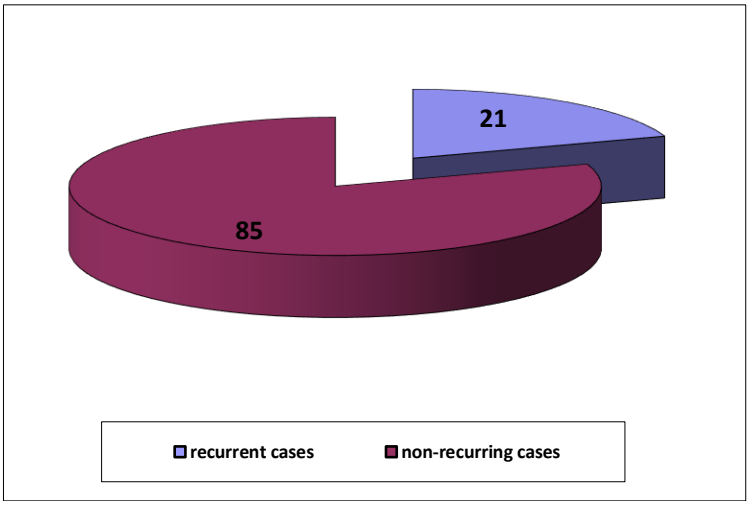


Figure 4

DISCUSSIONS

The UTI diagnosis, especially in the case of recurrence, should be complemented by imaging exploration with the aim of discovering, localizing and choosing the optimal therapeutic method for the resolution of urinary tract malformations.

Ultrasound is used, which can highlight hydronephrosis and megaureth or massive ureteral reflux.

Ureterocele, changes in renal ecogeneity or renal parenchymatous index

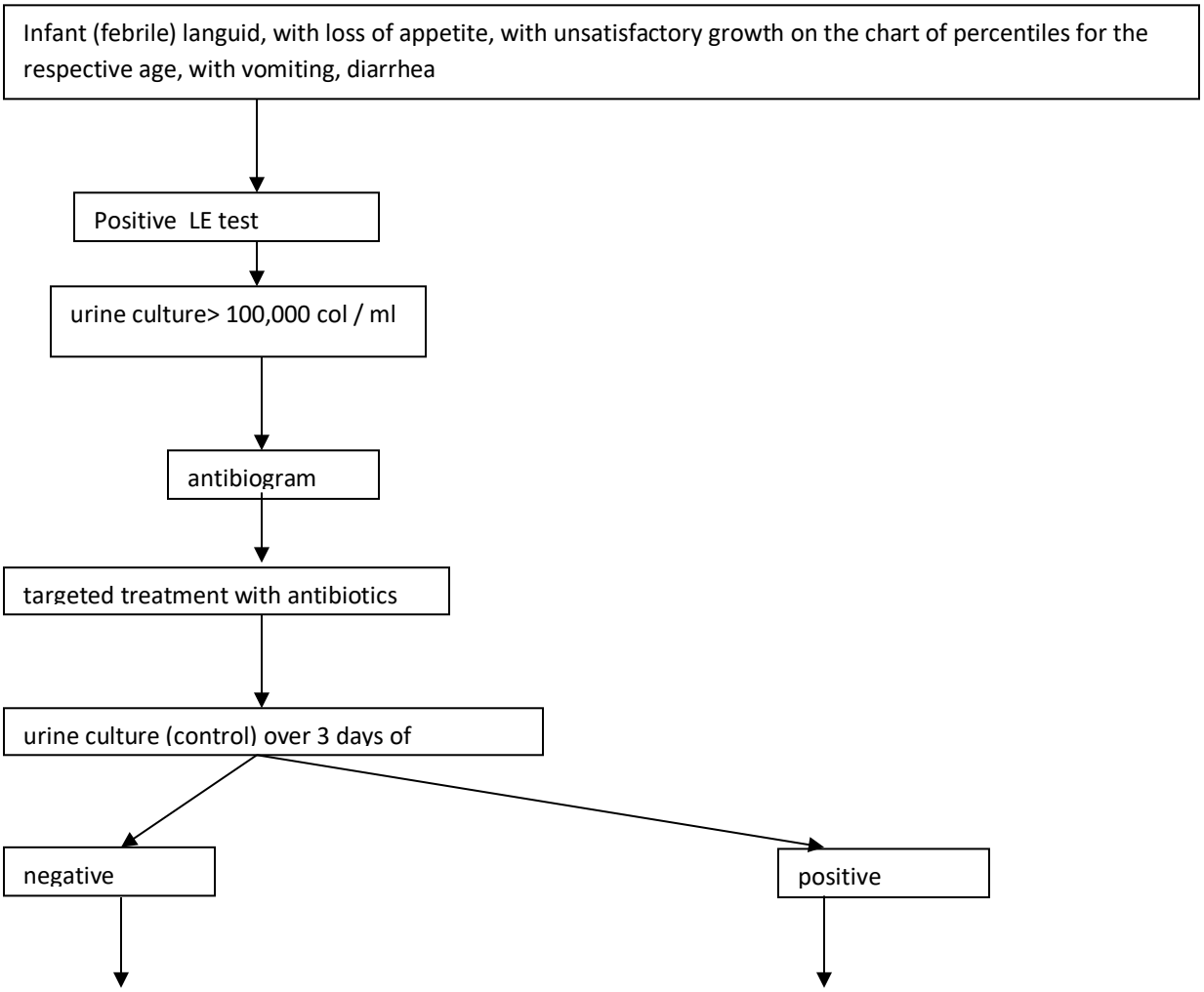
Mictional ureterocistography is the method of choice for vesicoureteral reflux, anatomic particularities cause over-50% of infants a low-grade vesicoureteral reflux, children with significant reflux have a 10-fold greater risk than non-reflux renal scars. The imaging method is performed with a contrast substance to increase the accuracy of the diagnosis, with a child in afebrility and having sterile urine culture to not advance to the kidneys.

Renal scintigraphy with dimercaptosuccinic acid indicates alterations of renal parenchyma and is recommended for recurrent UTI in infants 4 months after the acute episode.

Urography iv is not a recommended method in infant imaging investigations.

But in situations where dilation of the ureter or basin is evident, the ureterocystography does not specify reflux, urography may indicate megaurether by obstruction at the ureteral bladder junction or dilated basin through the ureteropelvic junction syndrome.

A diagnostic algorithm for UTI in infants could be:



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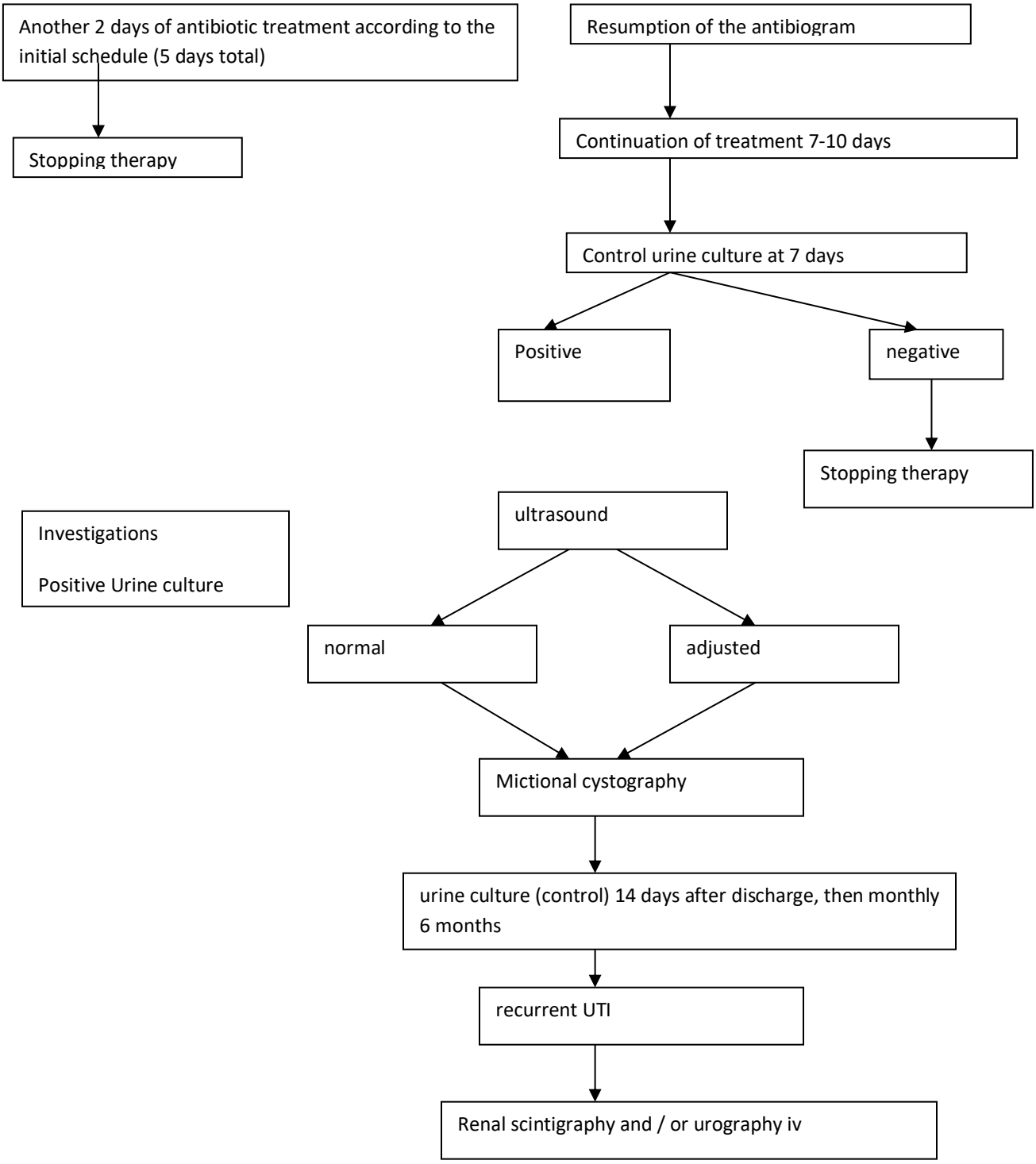

This algorithm could greatly restrict recurrences, implicitly repeated pyelonephritis with a high risk of definitive renal scarring. In case of malformative injuries, it would place the correct indication and operator time.

CONCLUSIONS

1. UTI in the baby is a difficult diagnosis, often established after exclusion of another pathology, a baby with fever and / or growth failure will necessarily have to be investigated for a possible UTI.
2. Uroculture remains the "gold standard" test for diagnosis provided it is performed correctly, respecting the aseptic rules.
3. Clinical study shows an important percentage of UTI in total infant hospitalization
4. Negative urine cultures after 2-3 days of antibiotic treatment can be interpreted as false positive initial results, transient or asymptomatic bacteria.
5. Always antibiogram dictates correct treatment, poor or absent response to an antibiotic where the germ is susceptible to the antibiotic shows "in vivo" in vitro variability response and indicates initial antibiotic review or association with a second antibiotic.
6. Complementary imaging methods are indispensable for complex diagnosis and evidence of a underlying UTI malformation
7. Simulating a simple diagnostic algorithm reduces recurrence and therefore reduces the risk of scarring.
8. Complete re-establishment of the biological and nutritional status of a baby with UTI is achieved over a minimum of 2-4 weeks of antibiotic cure, with a vicious circle of infection-catabolism.

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