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RESEARCH ARTICLE

CONTRIBUTION OF MODE B ULTRASOUND IN THE MANAGEMENT OF CATARACTS IN BAMAKO

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Abstract

Introduction: Cataract is a frequent ocular pathology in the world. The aim of our work was to study the contribution of mode B ultrasound in the diagnostic and therapeutic management of cataracts in the radiology department of the medical clinic "Marie Curie" in Bamako.

Material and Methods: This was a prospective, descriptive study carried out in the medical imaging department over a period of 2 years. Ocular examinations were performed exclusively with a B-mode ultrasound scanner by senior radiologists. All patients who performed an ocular ultrasound for the notion of cataract were included in the study. Socio-epidemiological data, clinical information and ultrasoundresultswereanalyzed.

Results: We identified 75 cases of ocular ultrasound for cataract, i.e. 73.52% of the total ocular ultrasound performed (102 cases). The median age was 49.25 years with a male predominance in 68% of cases.The state of the posterior segment and the preoperative assessment for cataract represented the most frequent indication, respectively 40% and 29.33%. Ultrasound was pathological in 68% of cases. The most common pathology was clouding of the lens (cataract) in (36% of cases). The other pathologies found on ultrasoundwereretinaldetachment (17.33%) and intraocularhemorrhage (12%) and lens dislocation (2.67%).

Conclusion: Ocular ultrasound is accessible in Bamako has allowed the study of the posterior segment of the eye in the diagnostic and therapeutic management of cataracts.

Introduction:-

Cataract is a clouding of the lens and represents one of the main indications for ocular ultrasound for the study of the posterior segment of the eye before surgery for implant placement [1].Ocular pathology in general is a real public health problem and 2.2 billion people worldwide suffer from visual impairment or blindness [2,3]. Cataract is the

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first ocular lesion in a tropical environment [2.4].Ultrasound is one of the means of medical imaging that is essential in the management of ocular pathologies. It allows a complete lesional orbital assessment and thus supplants the fundus examination which is limited in the exploration of the posterior chamber by the opacifications of the lens, of high frequency in our context [1,2,5].Ultrasound, with its good sensitivity, availability and excellent cost-effectiveness ratio, would constitute the imaging of the eye par excellence, in a tropical environment. No study on the study of the posterior segment in the assessment of cataracts could not be carried out in Bamako today, hence the initiative of our work.And the aim of ourworkwas to study the contribution of mode B ultrasound in the diagnostic and therapeutic management of cataracts in the radiologydepartment of the medicalclinic "Marie Curie" in Bamako.

Material and Methods:-

This was a prospective, descriptive study, carried out in the medical imaging department of the "Marie Curie" clinic over a period of 2 years from June 2020 to June 2022.It concerned all the patients who presented for the study of the posterior ocular segment on ultrasound as part of the pre and post-therapeutic cataract assessment, regardless of age and sex.All patients with complete records including (last name, first name, age, sex and origin) noted on a request for examination were included in our.And files that did not meet its criteria were not included.We identified 75 patients presenting for pre or post cataract surgical assessment over this period with 51 cases of pathological ultrasound and 24 cases of normal ultrasound. The patients came from public and especially private health structures in the city of Bamako.The ocular ultrasounds were performed by senior radiologists and sonographers (more than 10 years of experience) of the service with a General Electric (GE) Voluson Expert 730 brand ultrasound device put into circulation in 2010. It was equipped with four probes including a 5-12 MHz multi-frequency linear probe which had been used to carry out ocular ultrasounds.The examination is performed on patients in the supine position, with their eyes closed. The cuts made were axial, transvitrennes, and sagittal obliques successively exploring the anterior chamber, the posterior chamber, the lens, the optic nerve and systematically performing ocular biometry (axial length and the anterior chamber).Socio-epidemiological data, clinical information and ultrasound results were analyzed.

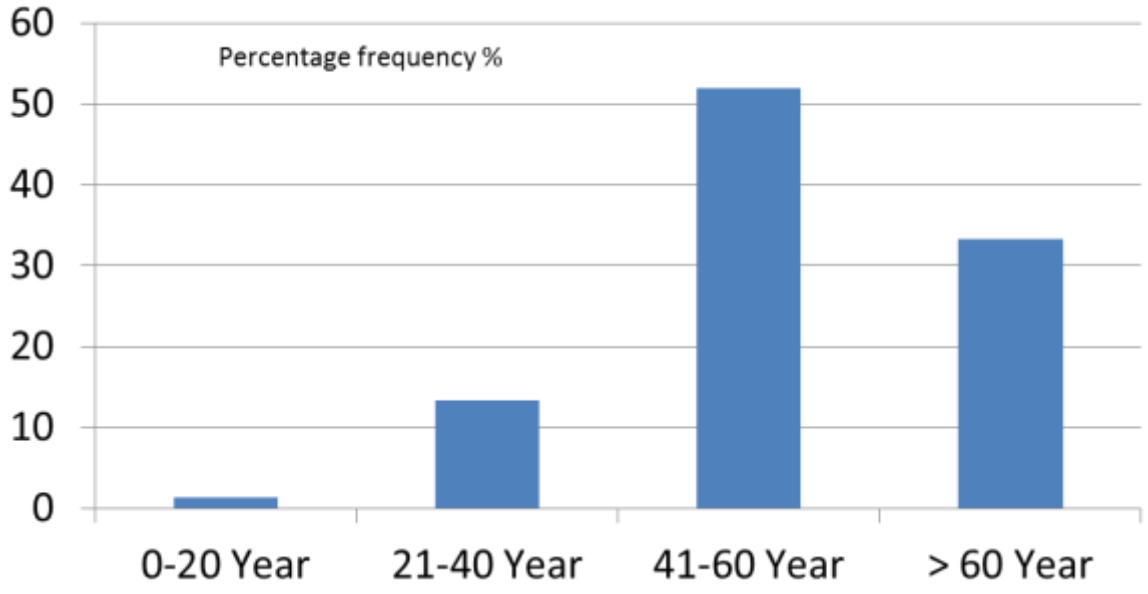
The information obtained was treated in strict anonymity.

Résultats:-

Epidemio-clinical elements :

Of 75 patients, (68%) were male and (32%) female. The average age was 49.25 years with extremes of 09 and 81 years. The dominant groups were 0-20 years (1.34%), 21-40 years (13.33%), 41-60 years (52%) and over 60 years (33.33%)**(Figure 1).**

Figure 1:- Breakdown by age group.



The state of the posterior segment and the preoperative assessment for the cataract represented the most frequent indications, respectively 40% and 29.33%, followed by the assessment of cataract controls which concerned patients already operated for implant placement (17.33% of cases). and the decrease in visual acuity (13.33%) (**Table I)**

indications	Number of patients	Percentages (%)
Posterior segment states	30	40
Cataract checks	13	17,33
Preoperative assessment	22	29,33
Decline in visual acuity	10	13,33
Total	75	100

Table 1:- Crawling of patients according to indications.

Ultrasound results

We have identified 75 cases of ocular ultrasound for cataracts, i.e. 73.52% of the total ocular ultrasounds performed (102 cases). Ultrasound was pathological in 68% of cases and 32% of cases were normal on ultrasound. The most common pathology was cataract (68% of cases) retained by the presence of opacification of the lens (calcification or echogenic thickening). The other pathologies found on ultrasound were retinal detachment (17.33%), intraocular hemorrhage (12%) and lens dislocation (2.67%) **(Table 2)**

Pathologies found on ultrasound	Patients	Percentage (%)
Calcifications of the lens (cataract)	51	68
Retinal detachment	13	17,33
Intravitreal hemorrhage	9	12
Posterior dislocation of the lens on cataract	2	2,67
Normal	24	32

Table 2:- Distribution of patients according to pathologies observed on ultrasound.

Figures 2, 3 and 4 describe the pathologies of the posterior segment found on ultrasound. Among the 51 patients who presented lesions of the posterior segment of the eye during the cataract, some of its pathologies were associated with each other, in particular, retinal detachment with vitreous hemorrhage (in 7 cases or 13.72% of cases) . All patients with retinal detachment or intravitreal hemorrhage had calcifications or echogenic thickening of the lens (cataract)

Figure 2:- Total retinal detachment in V in a context of cataract (echogenic thickening of the lens).

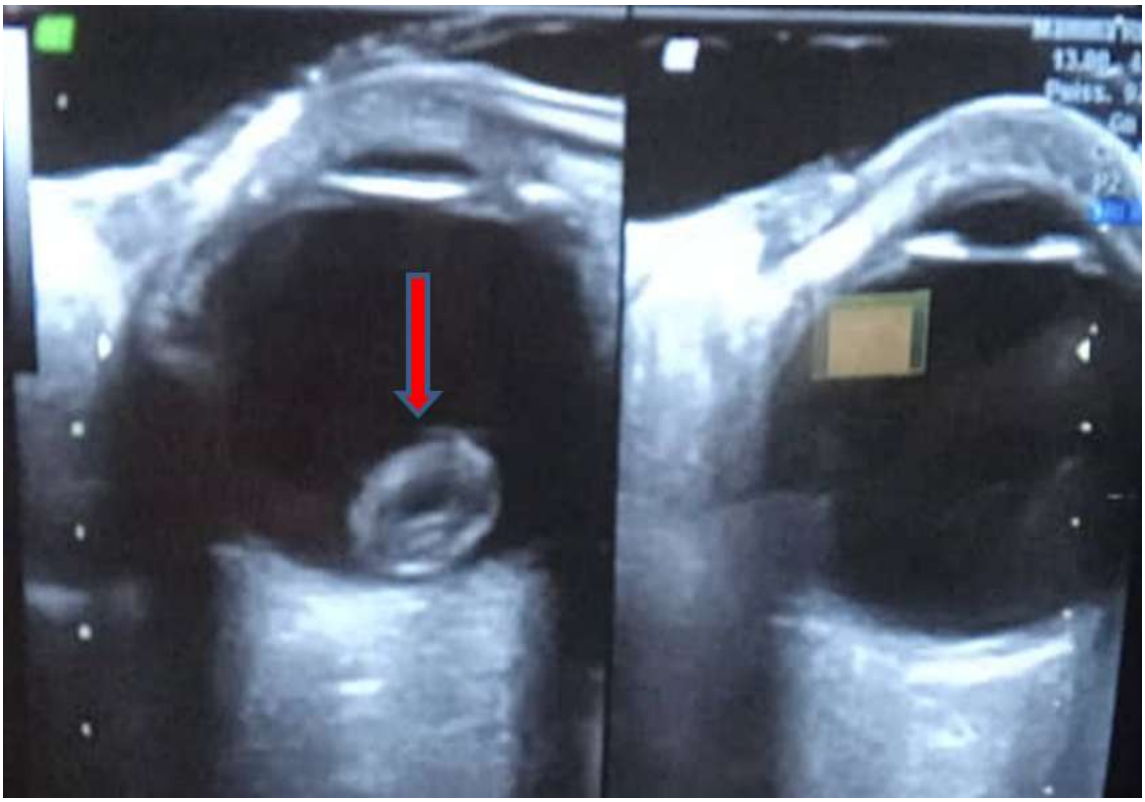


Figure 3:- Mode B ultrasound of a cataract of the right eye: echogenic thickening of the lens which is dislocated posteriorly.

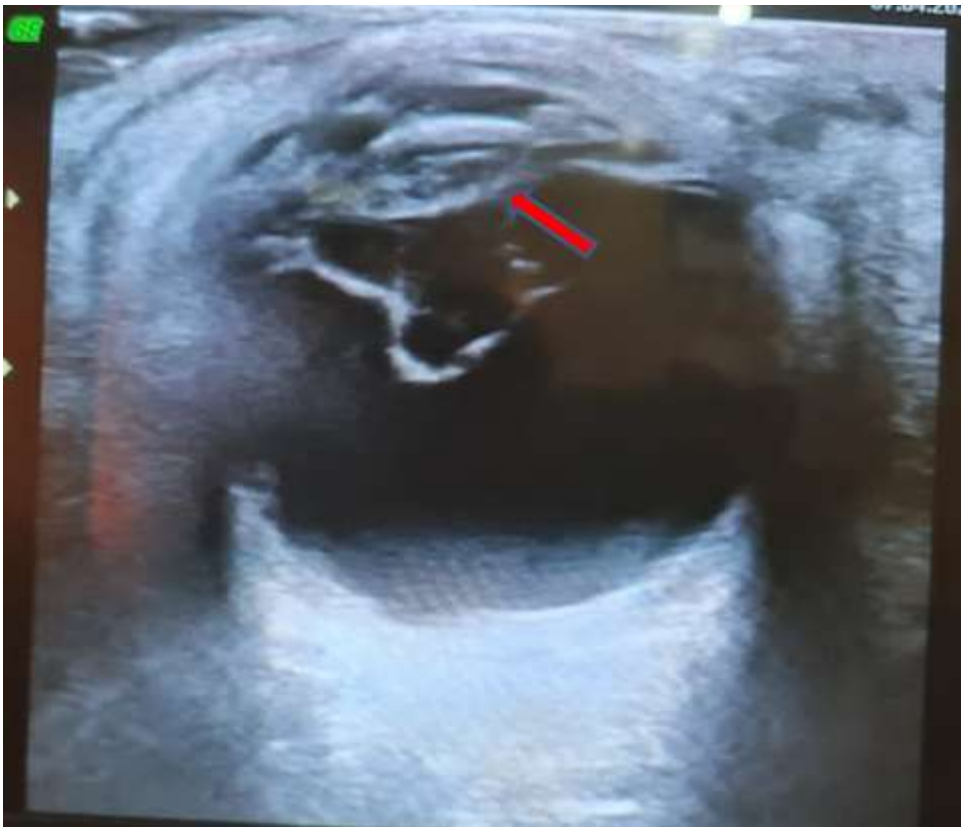


Figure 4:- Echogenic thickening of the lens (red arrow) in a context of cataract with intravitreal septa and total retinal detachment.

Discussion:-

Epidemio-clinical aspects

The average age found in our study was close to that of the average ages found in certain studies of the sub-region, particularly the Maghreb, Ivory Coast and Mali. In these studies, they respectively found the average age of 45.6 years, 39.2 years and 39.6 years [2, 6,7].The predominant age groups were also superimposable in the studies cited above. These were the age groups around 61 years or more. The predominant age group in our study was 41-60 years old. The proportion of children was low in our studies because cataracts and retinal detachment in children are rare compared to adults [8, 9].Men made up 68% while women were at 32%. This observation is close to that of the literature which found respectively 75% of cases and 70% of cases [10, 11]. These results are related to the physical and professional activity of men compared to women who are exposed to more risk.The reasons for ultrasound examination (the indications) were dominated by the study of the posterior segment. This can be explained by the high frequency of pathology of the posterior segment of the eye, in particular retinal detachment during a cataract. In fact, trauma is cited among the etiologies of retinal detachment in less frequency [12, 13, 14,15]. In our study there was no notion of trauma in the indications even if the latter is responsible for most of the cataracts in young subjects.

Ultrasound aspects

Ultrasound was pathological in 68% of cases. All these pathologies found in ocular ultrasound showed opacification of the lens which was manifested by calcifications or echogenic thickening of the lens evoking cataracts. The origin of his cataracts was unknown in most cases, therefore probably due to aging (the most frequent age group was 41 to 60 years in our study). But some notions of trauma, especially in young subjects, have been mentioned. This could be explained by the fact that most came for the preoperative cataract assessment (46.66% in our study). Constant alsodoes in the study by Konan AN [2].The opacification of the lens described above in our study (68% of cases) was superimposable on the data of the literature (77.2%) Konan AN [2]. 80% ARBAHA and 71.7% of cataract had also found a predominance of the total form of opacifications of the lens whether the origin of the cataract was senile or traumatic, whether it occurred in adults as in children [7, 16].This predominance of cataracts could be explained by the fact that the majority of patients were over 50 years old. This would be the age from which cataract

is more likely [2, 17]. Even if in his study, the indications were also dominated by the exploration of cataracts (75.8%), for their predominance was not related to the advanced age of the patients [7].The traumatic origin of cataracts can be explained by the fact that this pathology can be found at any age [7, 16].

The other pathologies found on ultrasound were retinal detachment (17.33%), intraocular hemorrhage (12%) and lens dislocation (2.67%). These lesions are all associated with cataracts but can occur alone or in combination. The case of retinal detachment with vitreous hemorrhage (13.72% of cases in our series). This result is comparable to those reported by some authors [1, 2, 18, 19, 20].

Regarding associated pathologies, detachment is often associated with cataract, vitreous hemorrhage and posterior vitreous detachment as well as subretinal hemorrhage. This can be explained by the fact that most of the detachment was caused by trauma but also by aging, of which cataract, intravitreal hemorrhage, posterior vitreous detachment and lens dislocation can be found as a consequence [12].

Conclusion:-

This study allowed us to see that cataract affects the older population. Most of these cataracts were mainly associated with retinal detachment seen on ultrasound but also with intravitreal hemorrhage and posterior dislocation of the lens. Ultrasound in B mode must occupy an important place in the diagnosis and post-therapeutic follow-up of this condition because of its simplicity, availability and accessibility.

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